AXIOMTEK

GOT3177T-311-FR

17" SXGA TFT Flat Bezel
Expandable Fanless Touch Panel
PC

User's Manual

RoHS

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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.

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 GOT3177T-311-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 GOT3177T-311-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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Table of Contents

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Section 1
Introduction

This Section contains general information and detailed specifications of the GOT3177T-311-FR, including the following subsections:

Figure 1-1 Front panel of the GOT3177T-311-FR

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

1.1   General Descriptions

The GOT3177T-311-FR has adopted a 17" SXGA TFT LCD with 350-nit brightness and an Intel® Pentium® Processor N4200 (4C, up to 2.5 GHz) (code name: Apollo Lake-M), providing excellent computing performance and thermal resistance. 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 GOT3177T-311-FR has been made an extremely robust and cost-effective solution.

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

The GOT3177T-311-FR can sustain extended operating temperature range between 0°C and +60°C by incorporating compact ID and fanless cooling system with a low power Intel® Pentium® Processor N4200). 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 GOT3177T-311-FR was specially designed for vibration-prone environments, best for the transportation (vehicle, railway, marine) and industrial machinery markets. With a patent of anti-vibration design, the GOT3177T-311-FR can work in operation mode under 1.0G (i.e. gravitational acceleration) (10 ~ 500Hz, random for HDD™), suitable for high capacity storage. The design behind the patent has improved the system reliability and sustainability. (Note: Sometimes heavy-vibration may cause the LCD screen to flash in white color; however, it won't affect the function of the product.)

- **17" Resistive Touch Screen**

The GOT3177T-311-FR has adopted a 17" Resistive Touch Screen, allowing users to operate it with direct touch.

- **Modularized design**

The GOT3177T-311-FR has featured a modularized design that user can easily change the PCIe Mini Card slot to meet different type expansion requirements.

- **WLAN antenna supported (optional)**

The GOT3177T-311-FR comes with one PCI Express 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 GOT3177T-311-FR utilizes one 204-pin DDR3L SODIMM system memory up to 8GB at the maximum, one SATA HDD and one mSATA. It provides an over-current protection-fuse and a full set of I/O including RS-232/422/485, USB 2.0, USB 3.0, audio (line-out), and Gigabit Ethernet. Additionally, this slim unit supports panel mount as the standard installation, as well as optionally wall/VESA/ and desktop stand mount.

1.2 Specifications

Main CPU Board

- **CPU**
  - ➢ Intel® Pentium® Processor N4200 (4C, up to 2.5 GHz) (code name: Apollo Lake-M) onboard

- **System Memory**
  - ➢ 1 x 204-pin SO-DIMM socket supports DDR3L up to 1866MT/s.
  - ➢ Maximum memory size up to 8GB

- **BIOS**
  - ➢ AMI UEFI BIOS

I/O System

- **Standard I/O**
  - ➢ 2 x RS-232
  - ➢ 2 x RS-232/422/485
  - ➢ 2 x USB 2.0
  - ➢ 2 x USB 3.0
  - ➢ 2 x RJ-45
  - ➢ 1 x HDMI
  - ➢ 1 x Power
  - ➢ 1 x ATX switch

- **Audio**
  - ➢ 2 x 3.5 Phone jack (Line out and MIC in)

- **Expansion**
  - ➢ 1 x PCIe Mini Card slot (with SIM slot, full size)
  - ➢ 1 x PCIe Mini Card slot (mSATA supported optionally, full size)

- **Storage**
  - ➢ 1 x 2.5" SATA HDD
  - ➢ 1 x mSATA

● **Power connector**
  ➢ Phoenix power connector

System Specifications

● 17" SXGA TFT LCD.

● 5 wired flat resistive touch

● A design of fanless heat dispensation

● IP65 aluminum front bezel

● Disk drive housing:
  ➢ One 2.5" SATA drive

● Net weight
  ➢ 5.7 Kgs

● Dimensions (of the main body)
  ➢ 398.02 x 330.44 x 59.9 mm

● Operating temperatures

  ➢ 0°C to 60°C

● Relative humidity

  ➢ 20% to 90% @ 40°C, Non-condensing

● System power input
  ➢ DC power input: 9~36VDC with Phoenix power connector

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 60°C.

1.3   Dimensions and Outlines

Diagram 1-1 shows the dimensions and outlines of the front panel of the GOT3177T-311-FR

Diagram 1-1 Front dimensions and outline of the GOT3177T-311-FR
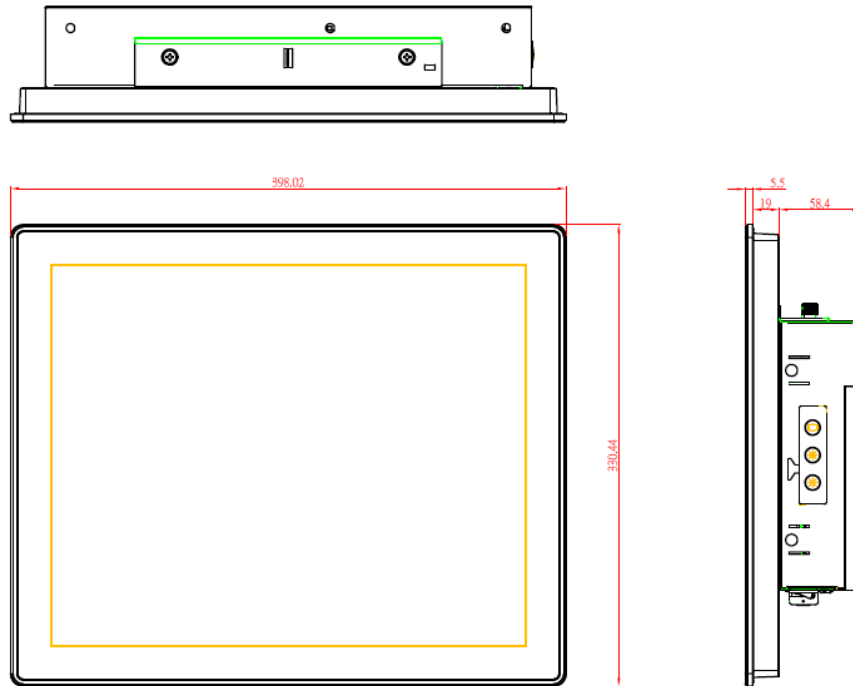
Front dimensions: 398.02 x 330.44 x 59.9 mm

Diagram 1-2 Back outline of the GOT3177T-311-FR
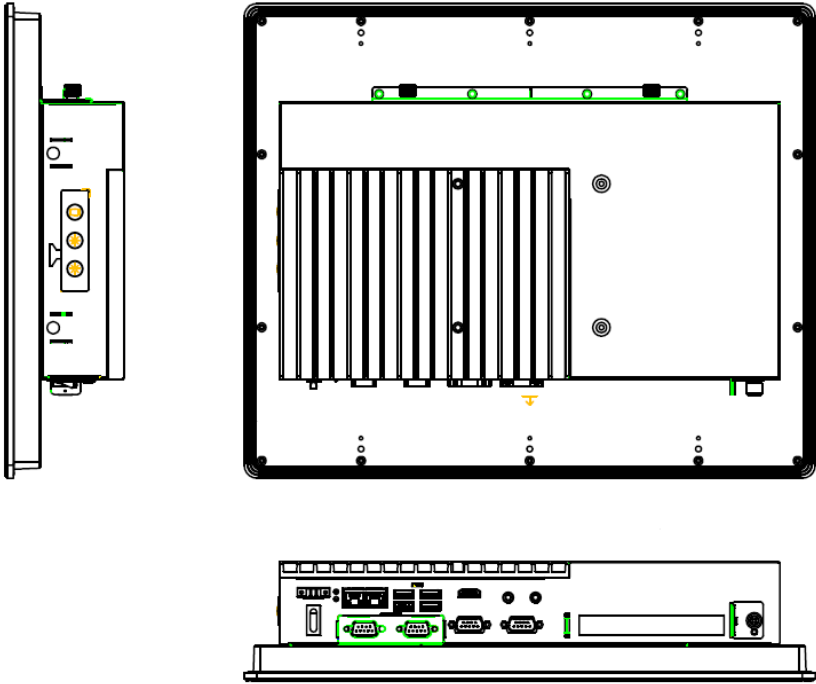
Diagram 1-3 Cutting-out dimensions of the GOT3177T-311-FR

386.63

319.05

CUT OUT

Cut out dimensions: 386.63 x 319.05 mm

1.4   I/O Outlets

Please refer to Figures 1-2 and 1-3 for I/O locations of the GOT3177T-311-FR.

Figure 1-2 Bottom view of the GOT3177T-311-FR
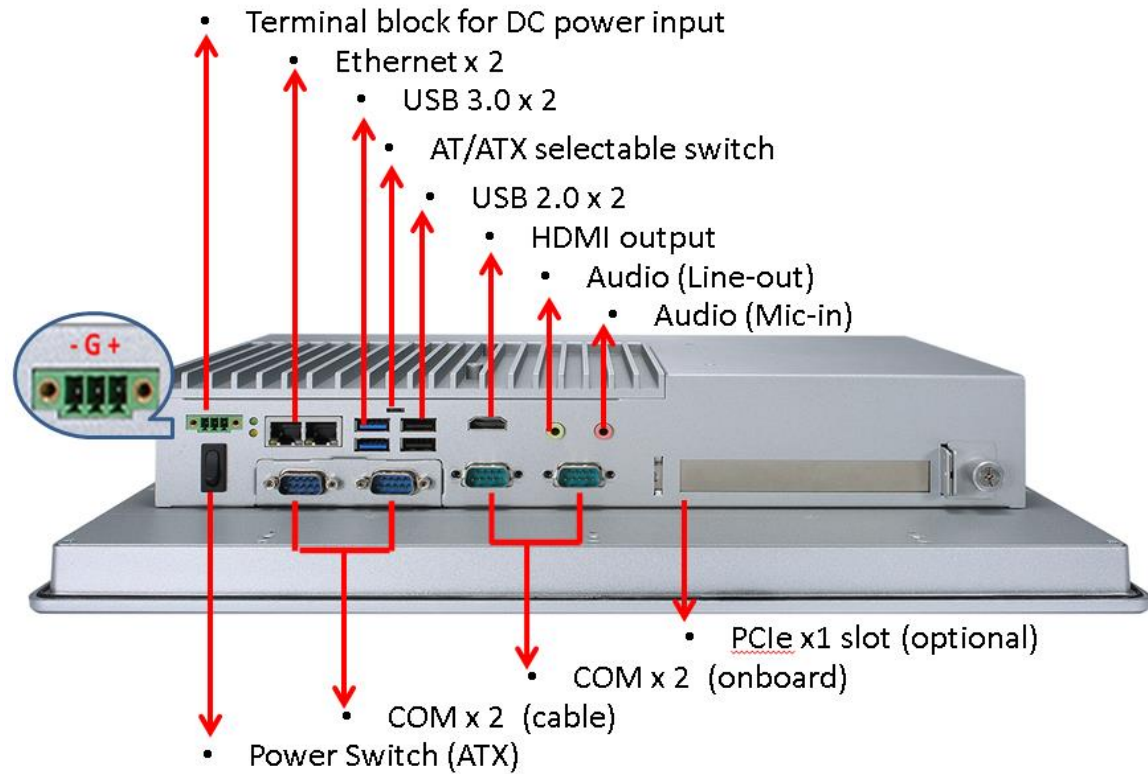
Figure 1-3 Side view of the GOT3177T-311-FR
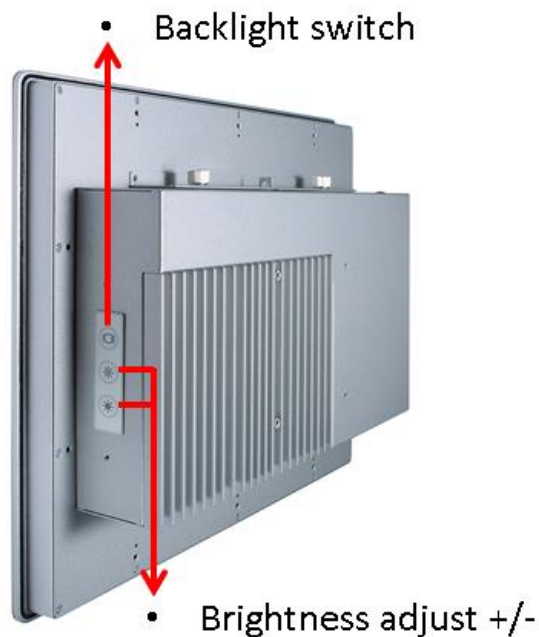
1.5   Packing List

A complete bundled package should contain the following items:

- GOT3177T-311-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 1 (containing three different types of panel mounts)
- Screws x 2 (fix HDD under the HDD bracket)
- Black rectangle sponge x 1 (only use with 7mm HDD)

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

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Section 2
Hardware and Installation

The GOT3177T-311-FR has provided rich I/O ports and flexible expansion for users to meet different demands; for example, in a case of PCIe slot expansion. 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 GOT3177T-311-FR unit.

Step 1   Unscrew 2 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.

Diagram 2-1 Definitions of pin settings

jumper clip	open	close	pin 1-2 close	all open
Pins 1-2 open	Pins 1-2 close	Pins 1-2 close	All pins open	
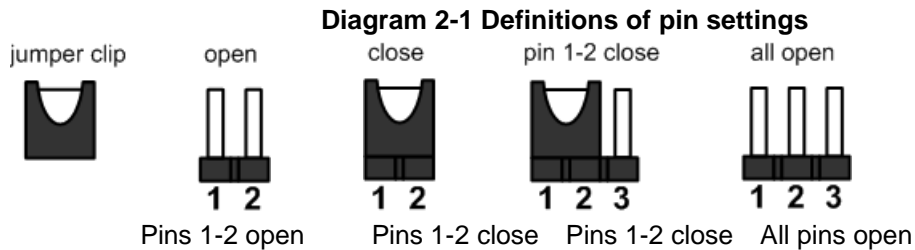
Before applying power to GOT3177T-311-FR, please make sure all of the jumpers and connectors are in default position as listed in Table 2-1.

Table 2-1 Factory mode of jumper settings

Jumper	Descriptions	Setting
JP7	Auto Power On Default: Disable	2-3 close
JP8	Restore BIOS Optimal Defaults (Clear CMOS) Default: Normal Operation	1-2 close

2.2.1 Auto Power On' Jumper (JP7)

If JP7 is enabled for power input, the system will be automatically power on without pressing soft power button. If JP7 is disabled for power input, it is necessary to manually press soft power button to power on the system (see Table 2-2).

Table 2-2 JP7 setting

Function	Setting
Enable auto power on	1-2 close
Disable auto power on (Default)	2-3 close

NOTE: **Either AT/ATX switch or JP7, just only one setting is "AT" that will be operated by AT power.**

2.2.2 Restore BIOS Optimal Defaults' Jumper (JP8)

Put jumper clip to pin 2-3 for a few seconds then move it back to pin 1-2. Doing this procedure can restore BIOS optimal defaults (see Table 2-3).

Table 2-3 JP8 setting

Function	Setting
Normal operation (Default)	1-2 close
Restore BIOS optimal defaults	2-3 close

2.2.3 COM Port Connector

The pin assignment for RS-232/ 422/ 485 is listed In Table 2-4.

Table 2-4 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
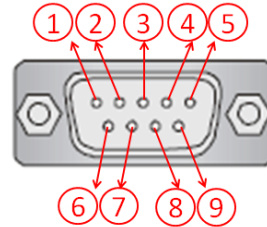
2.2.4 Ethernet Connector

There are two RJ-45 connectors, LAN1 and LAN2, inside the GOT3177T-311-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 2-5 for detailed pin assignment for LAN1 and LAN2.

Table 2-5 Pin assignment for LAN1/ LAN2

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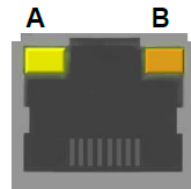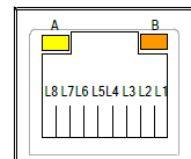
2.3   Mounting Methods

There are four ways to install the GOT3177T-311-FR, namely: panel/ VESA/ wall/ desktop mount.

Inside the packing list, the GOT3177T-311-FR comes with one panel mount kit containing three types of accessories for panel mount installation (see Figure 2-3, 2-4).

Figure 2-3 Panel mount (back chassis)
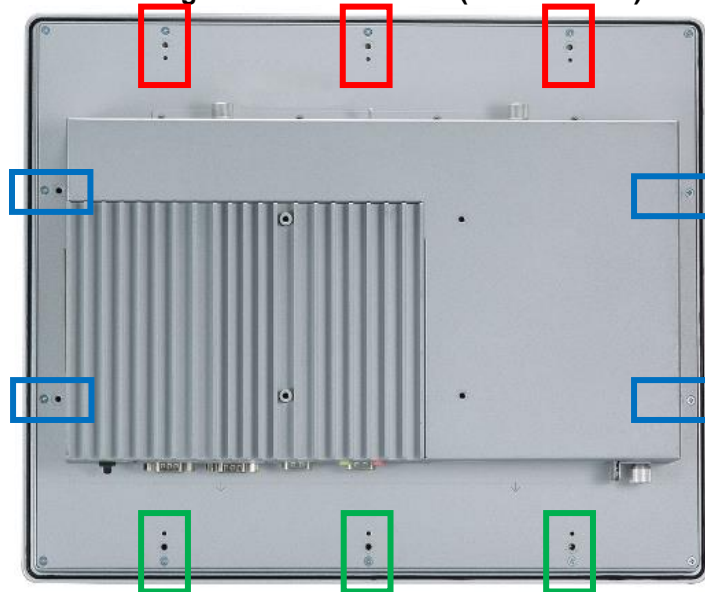
Figure 2-4 Panel mount kit
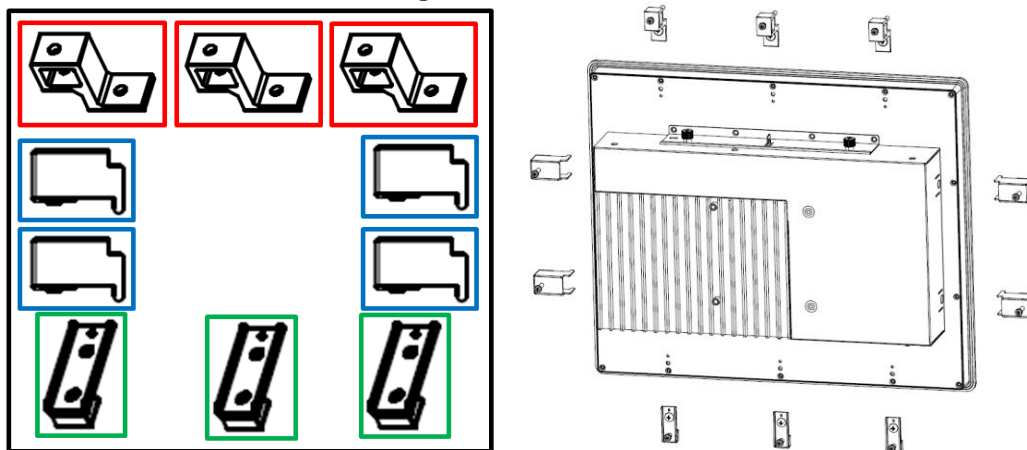
Alternatively, the GOT3177T-311-FR can be installed by way of VESA mount which is in the dimensions of 100x100 mm. Simply fix four screws to fasten the kit from the back chassis, as shown in Diagram 2-1. Additionally, users can otherwise go for wall mount as an option, as shown in Diagram 2-2.

Diagram 2-1 VESA mount (back chassis)
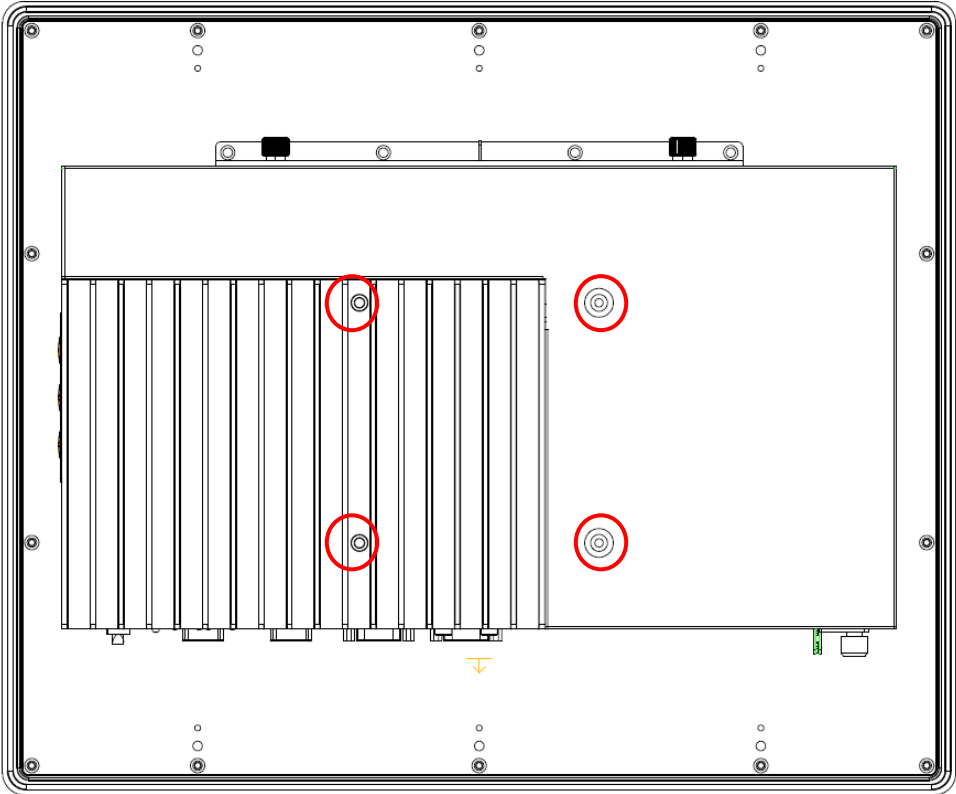
Diagram 2-2 Wall mount (back chassis)
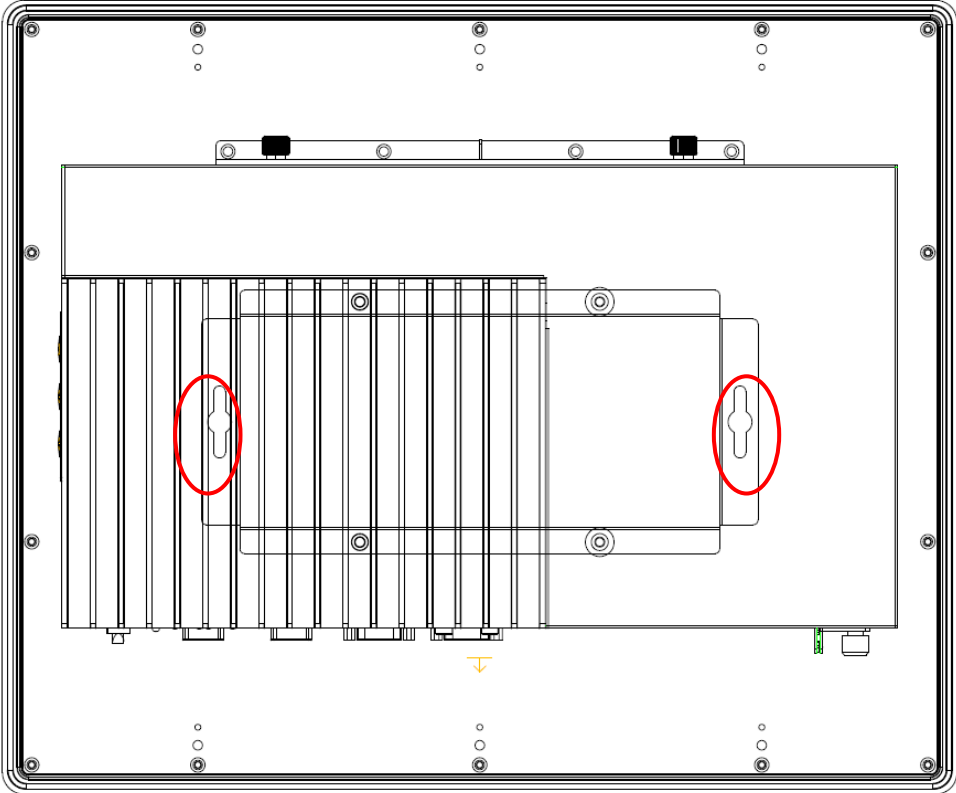
2.4   Hardware Installation

2.4.1 Installing a HDD

The GOT3177T-311-FR provides a convenient Hard Disk Drive (HDD) bracket for users to install a 2.5" SATA HDD. Please follow the steps:

Step 1   Refer to Section 2.1 to open the back cover.
Step 2   Using 7 mm HDD have to stick the black sponge on the HDD tray but 9.5 mm HDD don't have to stick it (as shown in the red rectangle in Figure 2-5).

Figure 2-5 Sticking a black sponge on the HDD tray
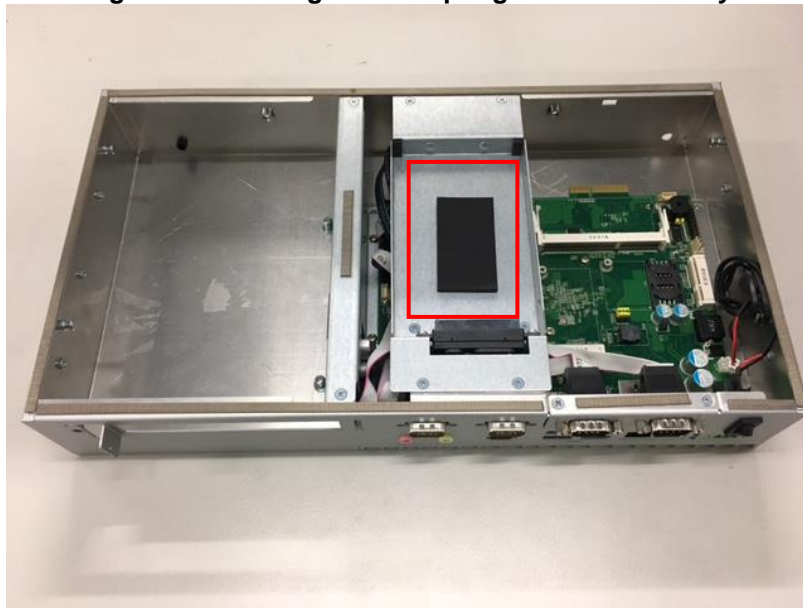
Step 3   Plug two connectors – one for SATA and the other for Power - to complete the installation (see Figure 2-6).

Figure 2-6 Connecting cables to connectors
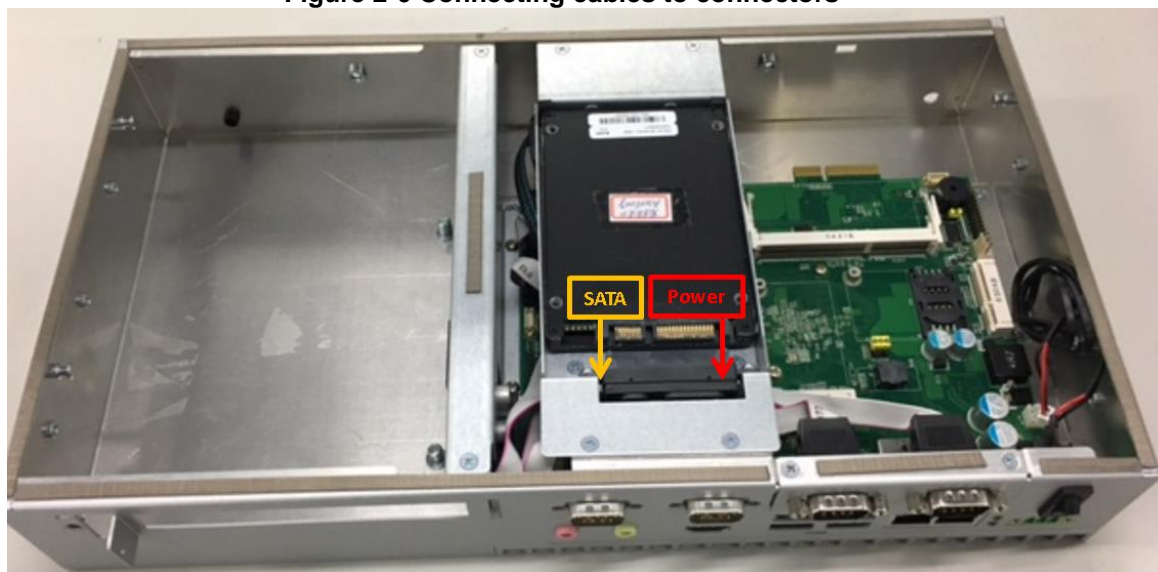
Step 4   **Put on the plastic slice and black mylar that could avoid HDD disengage from the SATA and power connectors (see Figure 2-7 red rectangle).**

Step 5   **Fastening the two screws (see Figure 2-7 red circles).**

Figure 2-7 HDD installation finished
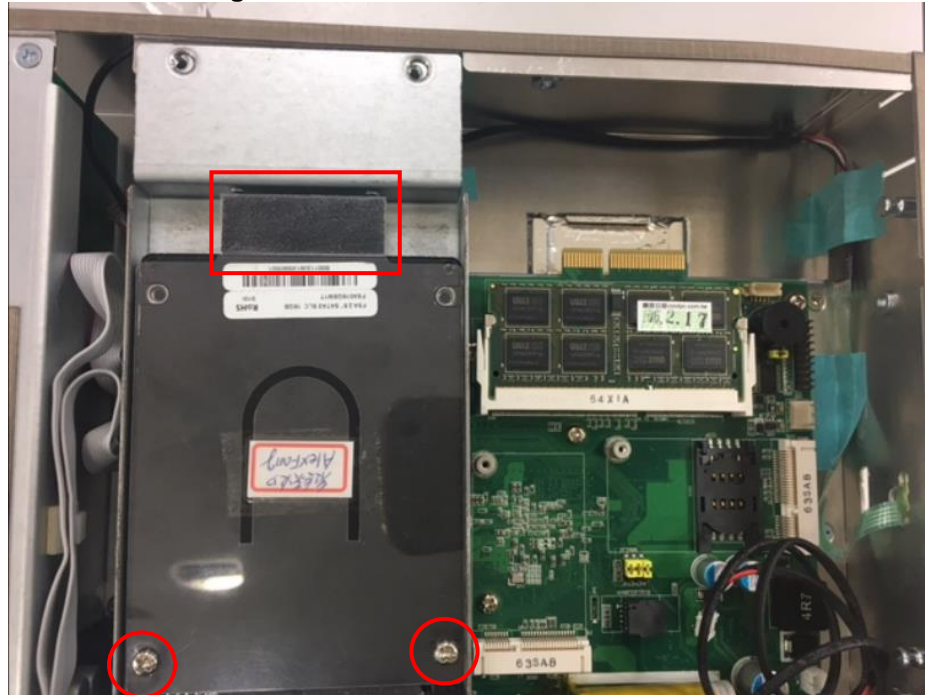
2.4.2 Installing a DRAM

The GOT3177T-311-FR provides one 204-pin DDR3L SODIMM socket that supports system memory up to 8GB. Please follow 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 2-8) on mainboard (Part No. SBC87311).**

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 2-9).**

Figure 2-8 Locating the DIMM socket
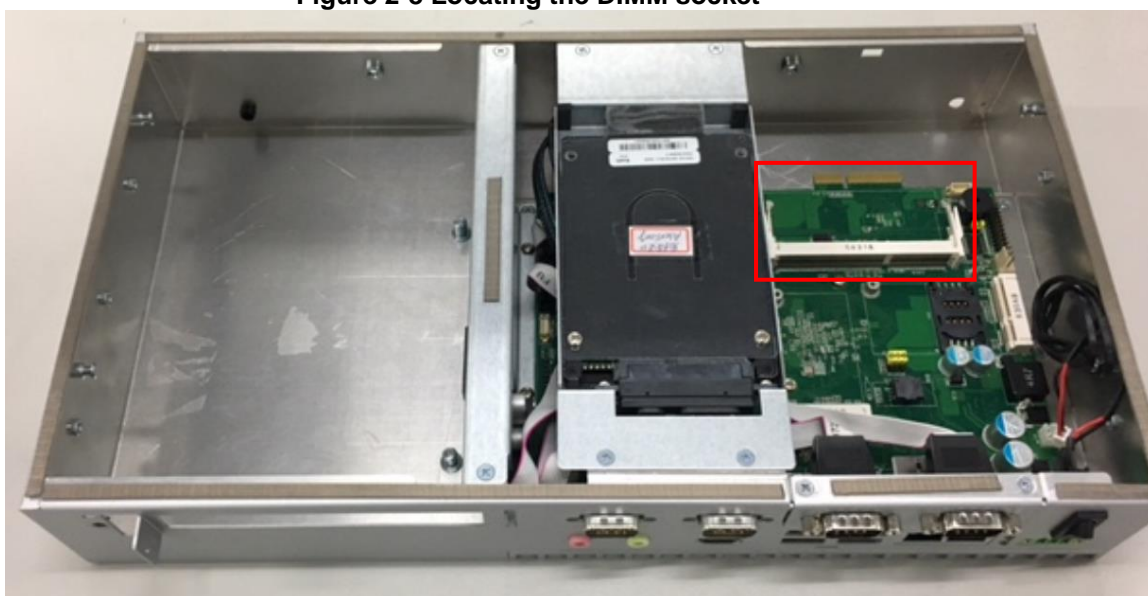
Figure 2-9 Inserting a DRAM into the DIMM

2.4.3 Installing a Wireless LAN Card

The GOT3177T-311-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 (either Slot 1 as shown in the red rectangle or Slot 2 as shown in the blue rectangle in Figure 2-10) on the mainboard.**

Figure 2-10 Mini Card slots 1 and 2
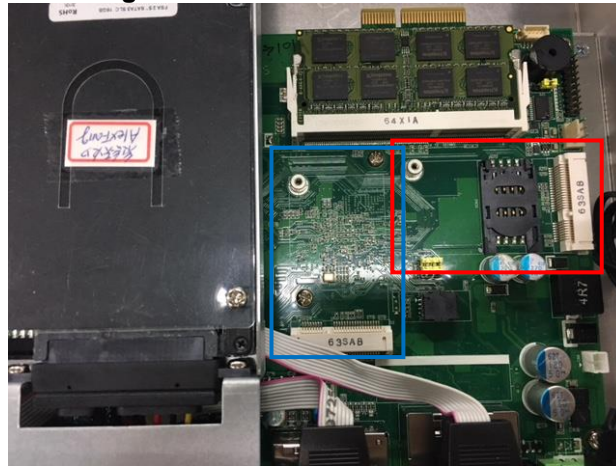
Step 2   **Insert the wireless LAN card and push it down firmly. Then screw tightly the card to the mainboard (see Figure 2-11).**

Figure 2-11 Inserting and securing a wireless LAN card
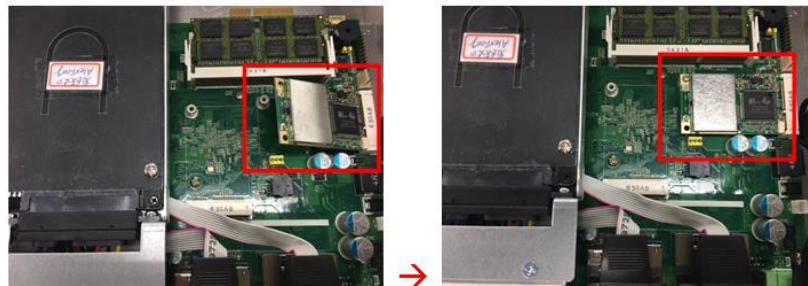
Step 3   **Locate the antenna cable and connect it to the wireless LAN card (see Figure 2-12).**

Figure 2-12 Connecting the antenna to the wireless LAN card
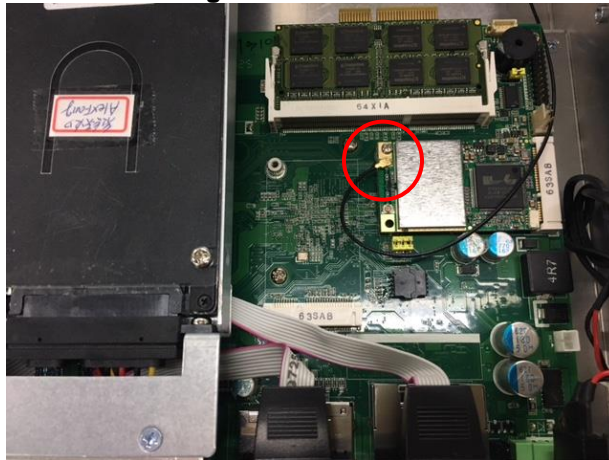
Step 4   **Remove the antenna plug from the top of back cover, and then install the antenna on the antenna connector (see Figures 2-13 and 2-14).**

Figure 2-13 The Antenna outlet (internal view)
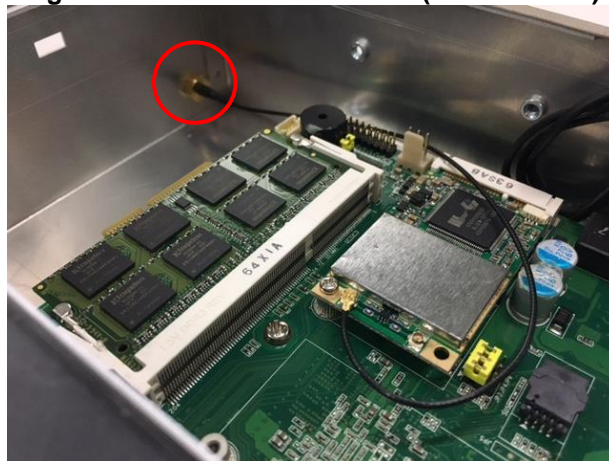
Figure 2-14 The Antenna outlet (external view)
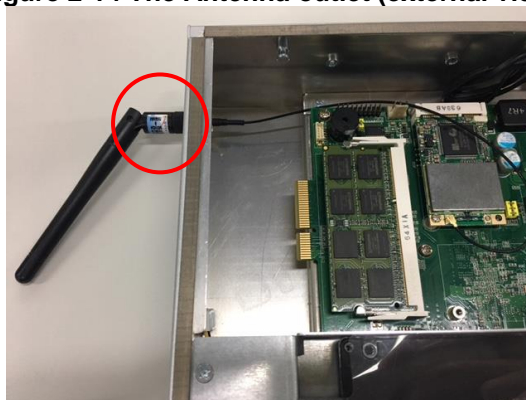
NOTE: ***Please use an extended bracket when using a half-size Mini card.***

2.4.4 Installing an expandable PCIe slot

The GOT3177T-311-FR comes with one PCIex1 slot for users to install expansion cards. Please refer to the following instructions and illustration for the installation of the expansion card.

Step 1   **Refer to Section 2.1 to open the back cover; then insert the PCIe slot so that the part as shown in the red circle is to be inserted into the part shown in the yellow circle (as shown in Figure 2-15).**

Figure 2-15 Inserting the PCIe slot
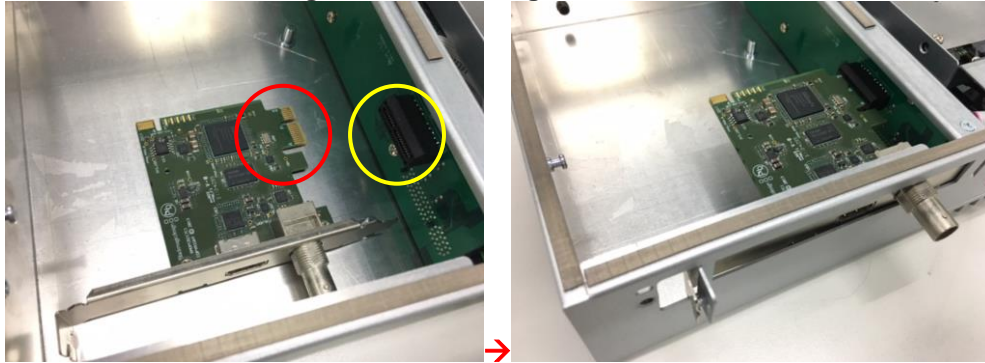
Step 2   **Fasten the screw (as shown in Figure 2-16 red circle). Now the installation is completed.**

Figure 2-16 Fastening the screw

2.5   Connecting the Power Input

The GOT3177T-311-FR is equipped with a Phoenix type of power connector which adopts 9~36VDC. Please follow the signs on the power connector to connect DC power source (see Figure 2-17).

Figure 2-17 The power connector

－:Power negative   +: Power positive

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.
<F2>	The <F2> key is used to load previous values.
<F3>	The <F3> key is used to load optimized defaults.
<F4>	The <F4> key is used to save any changes made then exit the setup. Press the <F4> key to save any changes.
<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   Main Menu

Figure 3-1 Main menu

```
             Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

   BIOS Information                                              Set the Date. Use Tab to
   Project Version              SBC87311 X.013                   switch between Date elements.
   Build Date and Time          03/16/2017 15:51:03              Default Ranges:
                                                                 Year: 2005–2099
   System Date                  [Sun 06/11/2017]                 Months: 1–12
   System Time                  [22:57:28]                       Days: dependent on month

   Access Level                 Administrator


                                                                 →←: Select Screen
                                                                 ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Opt.
                                                                 F1: General Help
                                                                 F2: Previous Values
                                                                 F3: Optimized Defaults
                                                                 F4: Save & Exit
                                                                 ESC: Exit



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```

System Date / Time

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the up/ down/ left and right arrow keys (see Figure 3-1). Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date entered must be in the MM/DD/YY format. The time is entered in HH:MM:SS format.

3.3 Advanced Menu

Figure 3-2 Advanced Menu

```
              Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ NCT6106D Super IO Configuration                         System Super IO Chip
  ▶ PCIE/mSATA Mini Card Configuration                      Parameters.
  ▶ NCT6106D HW Monitor
  ▶ ACPI Settings
  ▶ CPU Configuration
  ▶ SATA Configuration
  ▶ USB Configuration
  ▶ Utility Configuration


                                                            ➜←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/–: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit


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```

The Advanced menu allows users to set configurations of the CPU and other system devices. Select any item on the left to go to the sub-menus (as shown in Figure 3-2).

- ► *NCT6106D Super IO Configuration*
- ► *Hardware Monitor*
- ► *ACPI Settings*
- ► *CPU Configuration*
- ► *SATA Configuration*
- ► *USB Configuration*
- ► *Utility Configuration*
- ► *PCIE/mSATA Mini Card Configuration*

Simply highlight the item of choice, then press <Enter> to go to sub-menus for more specific options.

3.3.1 NCT6106D Super IO Configuration

The 'NCT6106D Super IO Configuration' page is to change the value of the Super IO Configuration. The description of the selected item will appear on the right side of the screen (as shown in Figure 3-3). For items marked with "►", please press <Enter> for further options (as shown in Figure 3-4).

Figure 3-3 Entering 'NCT6106D Super IO Configuration'

```
           Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
     Advanced

  NCT6106D Super IO Configuration                            Set Parameters of Serial Port
                                                             1 (COMA)
  Super IO Chip                        NCT6106D
► Serial Port 1 Configuration
► Serial Port 2 Configuration
► Serial Port 3 Configuration
► Serial Port 4 Configuration




                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

► **Serial Port 1 (COM1) / Serial Port 2 (COM2)**

Serial port
This option is used to enable or disable serial port COM1/COM2.

Device Setting
This item specifies the base I/O port address and the Interrupt Request (IRQ) address of the serial ports.
Optimal setting for Port 1 is *3F8/IRQ4*.
Optimal setting for Port 2 is *2E8/IRQ3*.

COM Port Type
This option is used to select COM Port Type: RS-232/422/ or 485.

Figure 3-4 'NCT6106D Super IO Configuration' -> 'Serial Port'

```
              Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
   Advanced

 Serial Port 1 Configuration                                        Enable or Disable Serial Port
                                                                    (COM)
 Serial Port                        [Enabled]
 Device Settings                    IO=3F8h; IRQ=4;

 Change Settings                    [Auto]
 COM Port Type                      [RS232]
 COM Port Term Type                 [Disabled]


                                                                    →←: Select Screen
                                                                    ↑↓: Select Item
                                                                    Enter: Select
                                                                    +/-: Change Opt.
                                                                    F1: General Help
                                                                    F2: Previous Values
                                                                    F3: Optimized Defaults
                                                                    F4: Save & Exit
                                                                    ESC: Exit



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```

3.3.2 PCIE /mSATA Mini Card Configuration

Highlight item "NCT6106D Super IO Configuration" under the Advanced Menu as shown in Figure 3-5.

Figure 3-5 Entering 'NCT6106D Super IO Configuration'

```
               Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
      Main   Advanced   Chipset   Security   Boot   Save & Exit

  ▶ NCT6106D Super IO Configuration                          System Super IO Chip
  ▶ PCIE/mSATA Mini Card Configuration                       Parameters.
  ▶ NCT6106D HW Monitor
  ▶ ACPI Settings
  ▶ CPU Configuration
  ▶ SATA Configuration
  ▶ USB Configuration
  ▶ Utility Configuration

                                                             ──────────────────────
                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

3.3.3 Hardware Monitor

Figure 3-6 shows a screen reflecting the health status of the hardware in real time.

Figure 3-6 Entering 'Hardware Monitor'

```
            Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
          Advanced

          Pc Health Status

          System temperature1              : +36 ℃
          CPU temperature                  : +37.0 ℃
          +5VSB                            : +5.200 V
          VBAT                             : +2.721 V
          +5V                              : +5.200 V
          +3.3V_SBY                        : +3.264 V
          +3.3V                            : +3.056 V


                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

3.3.4 ACPI Settings

This screen is used to select options of the ACPI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

ACPI Sleep State
This item allows users to select the *Advanced Configuration and Power Interface* (ACPI) state to be used for system suspension. There are two choices under this selection: *Suspend Disable* and *S3 (Suspend to RAM)* (as shown in Figure 3-7).

Figure 3-7 Entering 'ACPI Settings'

```
          Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
  Advanced

  ACPI Settings                                            Select the highest ACPI sleep
                                                           state the system will enter
  ACPI Sleep State              [S3 (Suspend to RAM)]      when the SUSPEND button is
                                                           pressed.




                                                           ──────────────────────────────
                                                           ↔: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



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```

3.3.5 CPU Configuration

Figure 3-8 shows a page of CPU configuration with item *Intel Virtualization Technology [enable/disable]* highlighted.

Figure 3-8 Entering 'CPU Configuration'

```
         Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
    Advanced

 CPU Configuration                                    When enabled, a VMM can
                                                      utilize the additional
 Intel(R) Pentium(R) CPU N4200 @ 1.10GHz             hardware capabilities provided
 CPU Signature                  506C9                 by Vanderpool Technology
 Microcode Patch                1C
 Max CPU Speed                  1100 MHz
 Min CPU Speed                  800 MHz
 Processor Cores                4
 Intel HT Technology            Not Supported
 Intel VT-x Technology          Supported
 64-bit                         Supported

 L1 Data Cache                  24 kB x 4            ─────────────────────────
 L1 Code Cache                  32 kB x 4            →←: Select Screen
 L2 Cache                       1024 kB x 2          ↑↓: Select Item
 L3 Cache                       Not Present          Enter: Select
                                                     +/-: Change Opt.
 Intel Virtualization Technology   [Enabled]         F1: General Help
                                                     F2: Previous Values
 VT-d                           [Enabled]            F3: Optimized Defaults
 EIST                           [Enabled]            F4: Save & Exit
 Turbo Mode                     [Enabled]            ESC: Exit




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```

3.3.6 SATA Configuration

This screen allows users to select options for SATA Configuration, and change the value of the selected option (see Figure 3-9).

SATA Controller

Highlight this item to set up SATA Controller to be Enable or Disable.

Figure 3-9 Entering 'SATA Configuration'

```
              Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
      Advanced

  SATA Configuration                                         Enables or Disables the
                                                             Chipset SATA Controller.  The
   Chipset SATA                      [Enable]                Chipset SATA controller
  SATA Mode Selection                [AHCI]                  supports the 2 black internal
                                                             SATA ports (up to 3Gb/s
   SATA Port 0                       [Not Installed]         supported per port).
   SATA Device Type                  [Solid State Drive]

   SATA Port 1                       [Not Installed]



                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit




              Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

3.3.7 USB Configuration

Please see Figure 3-10 to see what items can be set up under the page of *USB Configuration*.

Figure 3-10 Entering 'USB Configuration'
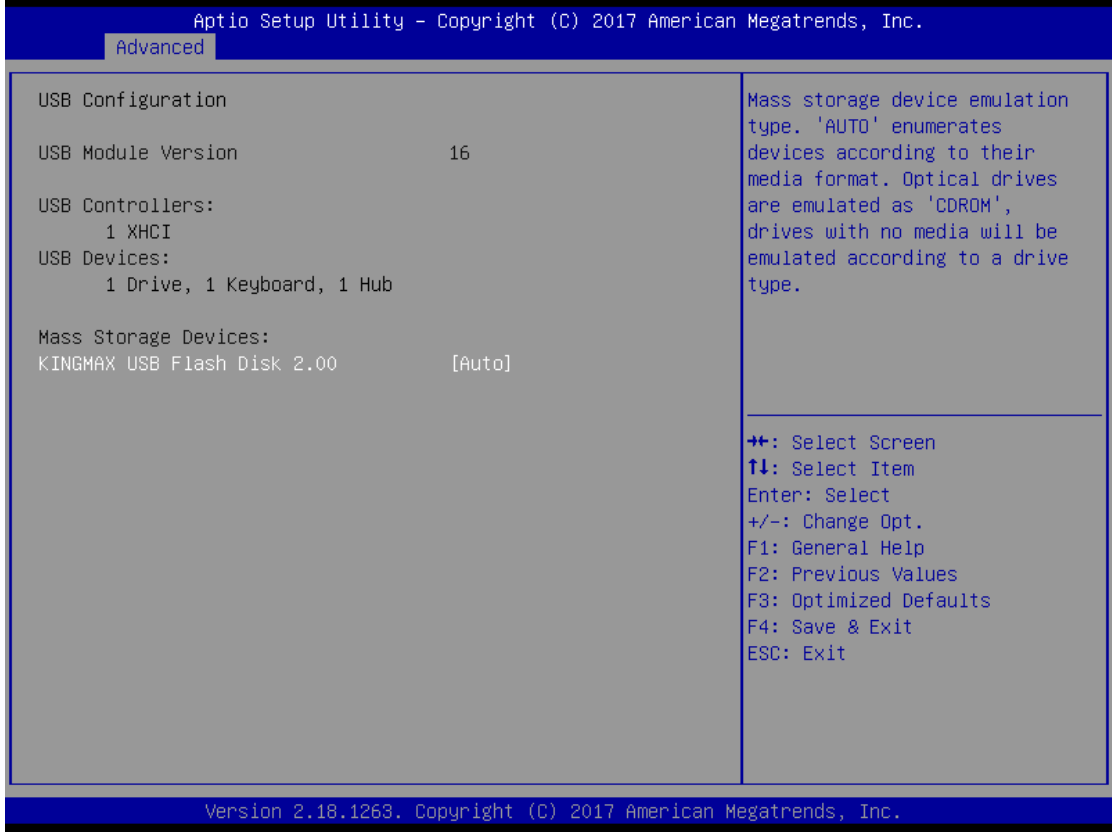
3.3.8 Utility Configuration

Figure 3-11 shows the page once entering *Utility Configuration*.

Figure 3-11 Entering 'Utility Configuration'

AMI BIOS Setup Utility

3.4　Chipset Menu

The Chipset menu gives memory information about the *Total Memory* and the *Memory Slot0* (see Figure 3-12).

Figure 3-12 Chipset Menu

```
            Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
            Chipset

▶ LCD Control                                            LCD Control

  Memory Information

  Total Memory                  4096 MB (LPDDR3)

  Memory Slot0                  4096 MB (LPDDR3)



                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/−: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



            Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```
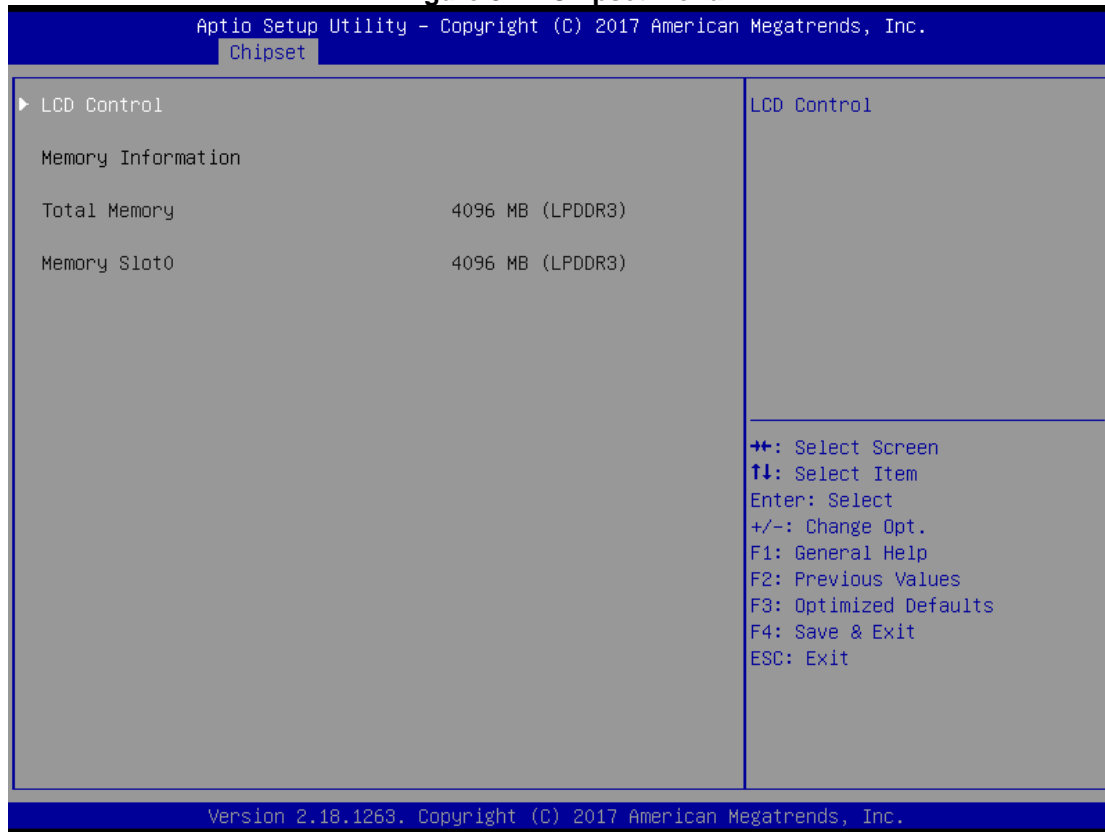
3.4.1 LCD Control

Chipset information about the *Primary IGFX Boot Display is* show in Figure 3-13.

Figure 3-13 Entering 'LCD Control'

```
                  Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
                  Chipset

   LCD Control                                          Select the Video Device which
                                                        will be activated during POST.
   Primary IGFX Boot Display          [Auto]            This has no effect if external
                                                        graphics present.
                                                        Secondary boot display
                                                        selection will appear based on
                                                        your selection.
                                                        VGA modes will be supported
                                                        only on primary display


                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit



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```

3.4.2 TXE information

TXE information about the *MRC Version / PMC FW / TXE FW* is show in Figure 3-14.

Figure 3-14 Entering 'TXE information'
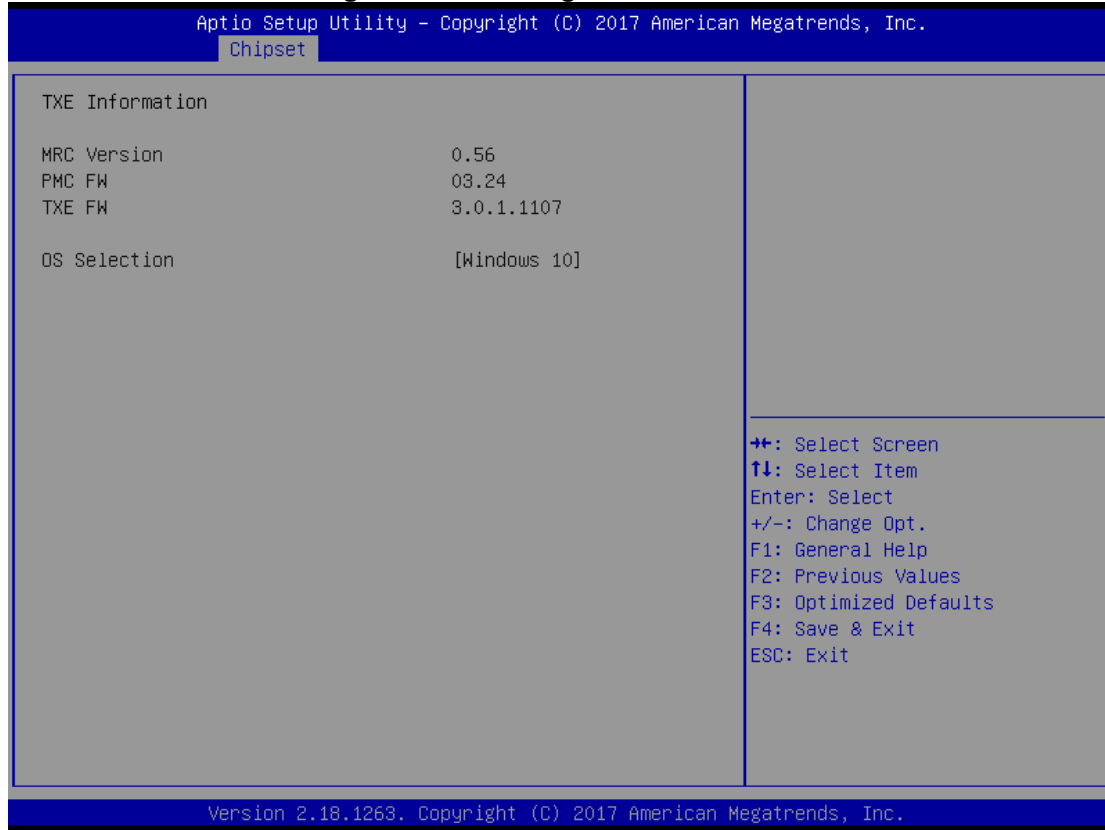
3.5 Security Menu

Figure 3-15 Security Menu

```
                 Aptio Setup Utility — Copyright (C) 2017 American Megatrends, Inc.
    Main   Advanced   Chipset   Security   Boot   Save & Exit

  Password Description                                      Set Setup Administrator
                                                            Password
  If ONLY the Administrator's password is set,
  then this only limits access to Setup and is
  only asked for when entering Setup.
  If ONLY the User's password is set, then this
  is a power on password and must be entered to
  boot or enter Setup. In Setup the User will
  have Administrator rights.
  The password length must be
  in the following range:
  Minimum length                     3
  Maximum length                     20
                                                            →←: Select Screen
                                                            ↑↓: Select Item
  Setup Administrator Password                              Enter: Select
  User Password                                             +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



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```

3.6   Boot Menu

The Boot menu allows users to change boot options of the system. Users can highlight any of the items on the left frame of the screen to go to any particular sub menus (as shown in Figure 3-16).

Figure 3-16 Boot Menu

```
          Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

    Boot Configuration                                      Number of seconds to wait for
                                                            setup activation key.
    Setup Prompt Timeout                1                   65535(0xFFFF) means indefinite
    Bootup NumLock State                [On]                waiting.

    Quiet Boot                          [Disabled]
    Launch PXE OpROM policy             [Disabled]
    New Boot Option Policy              [Default]

    Boot Option Priorities
    Boot Option #1                      [UEFI: Built-in EFI ...]
    Boot Option #2                      [UEFI: KINGMAX USB F...]
    Boot Option #3                      [KINGMAX USB Flash D...]
                                                            ────────────────────────────
    Hard Drive BBS Priorities                               ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit


          Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```
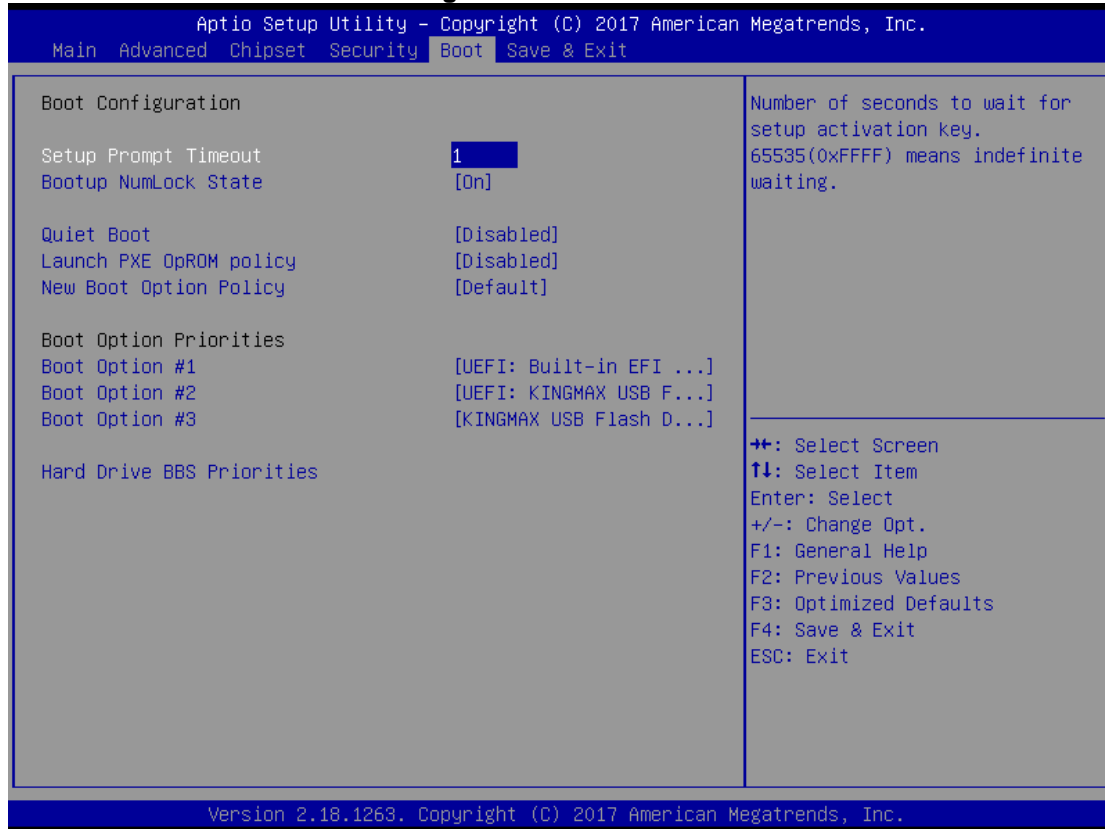
Setup Prompt Timeout
Enter a numeric value here as the length for timeout.

Bootup NumLock State
Use this item to select the power-on state for NumLock. The default setting is [On].

Quiet Boot
Use this item to enable or disable the Quite Boot state. The default setting is [Disabled].

PXE ROM
Use this item to enable or disable the Pre-boot Execution Environment (PXE). The default setting is [Disabled].
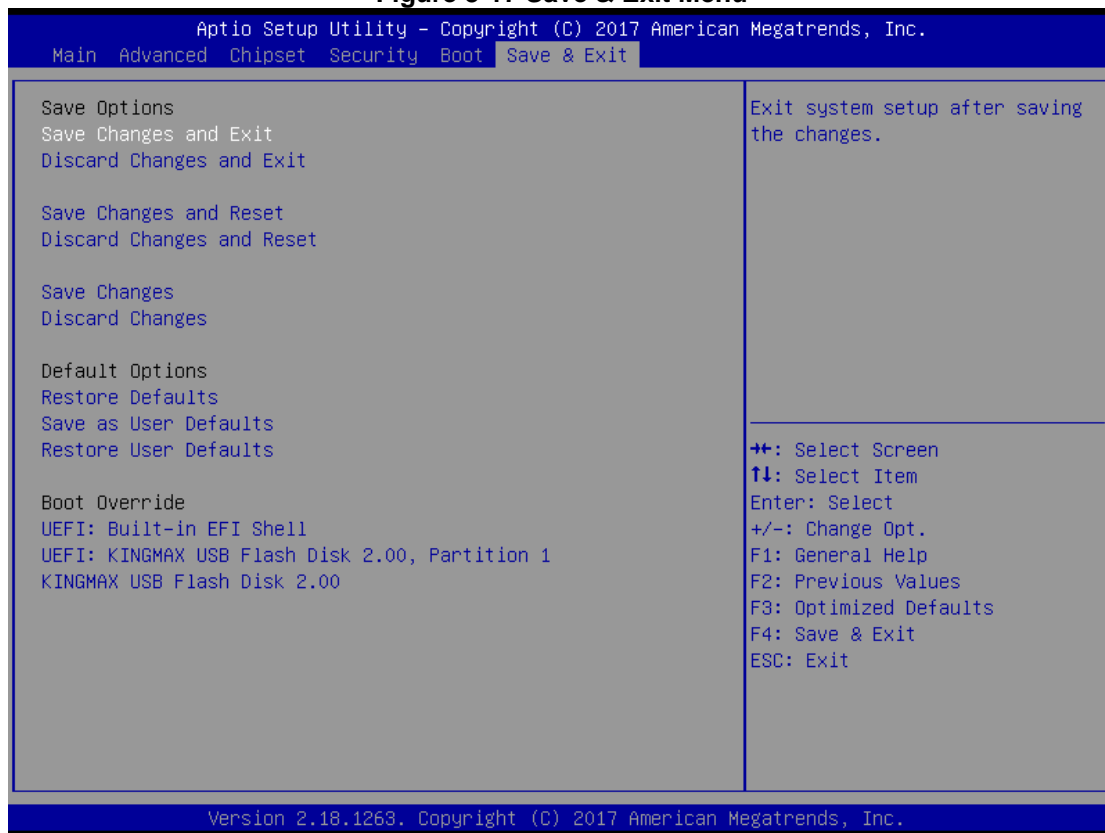
Boot Option Priorities
Use this item to specify the overall boot order among the available devices.

NOTE: This system only support UEFI BOOT mode.

3.7   Save & Exit Menu

Figure 3-17 Save & Exit Menu

```
                 Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
       Main   Advanced   Chipset   Security   Boot   Save & Exit

      Save Options                                          Exit system setup after saving
      Save Changes and Exit                                 the changes.
      Discard Changes and Exit

      Save Changes and Reset
      Discard Changes and Reset

      Save Changes
      Discard Changes

      Default Options
      Restore Defaults
      Save as User Defaults
      Restore User Defaults                        ++: Select Screen
                                                    ↑↓: Select Item
      Boot Override                                 Enter: Select
      UEFI: Built-in EFI Shell                      +/-: Change Opt.
      UEFI: KINGMAX USB Flash Disk 2.00, Partition 1   F1: General Help
      KINGMAX USB Flash Disk 2.00                   F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit




                 Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.
```

Section 4
Driver and Installation

4.1   Operating System

The GOT3177T-311-FR is compatible with operating systems Windows 10 pro and Windows 10 IoT Enterprise. To facilitate the installation of system drivers, please carefully read the instructions in this Section before any of such installation.

4.1.1 Installing System Drivers

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

Figure 4-1 Folders of system drivers

Step 1. Chipset   Step 2. Graphic   Step 3. LAN   Step 4. HD Audio   Step 5. Trusted Execution Engine

Step 2   Select all files and follow the installing procedure from Steps 1 to 5.

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

4.2   Touch Screen

The GOT3177T-311-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

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

This page is intentionally left blank.

Appendix A
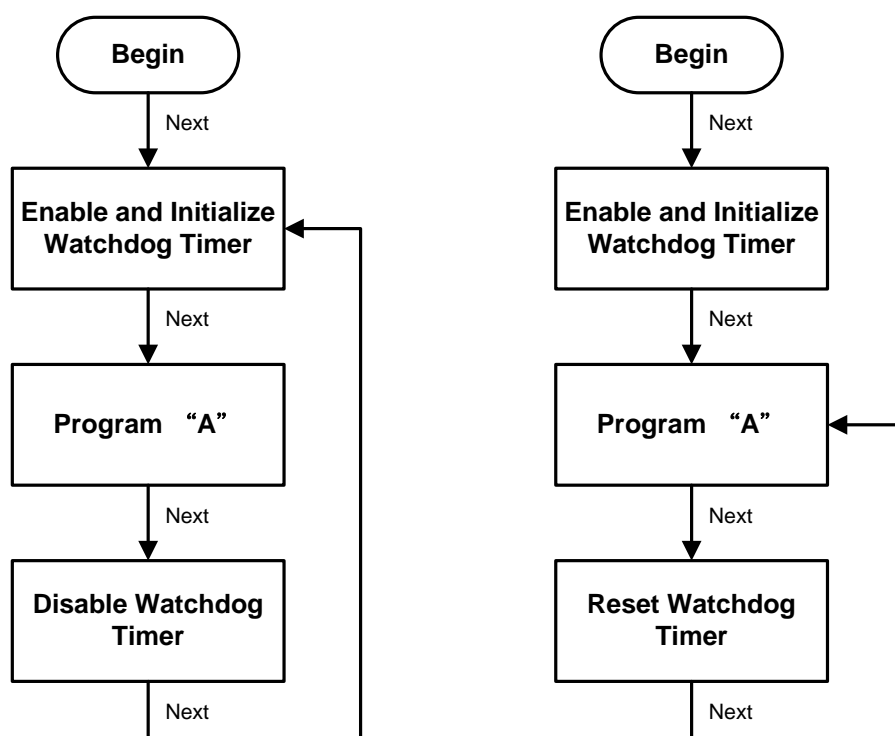# Watchdog Timer

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.

```
        Begin                              Begin
          |  Next                            |  Next
          v                                  v
 ┌──────────────────┐              ┌──────────────────┐
 │ Enable and       │◄──┐          │ Enable and       │
 │ Initialize       │   │          │ Initialize       │
 │ Watchdog Timer   │   │          │ Watchdog Timer   │
 └──────────────────┘   │          └──────────────────┘
          |  Next        │                  |  Next
          v             │                  v
 ┌──────────────────┐   │          ┌──────────────────┐
 │                  │   │          │                  │◄──┐
 │  Program "A"     │   │          │  Program "A"     │   │
 │                  │   │          │                  │   │
 └──────────────────┘   │          └──────────────────┘   │
          |  Next        │                  |  Next        │
          v             │                  v             │
 ┌──────────────────┐   │          ┌──────────────────┐   │
 │ Disable Watchdog │   │          │ Reset Watchdog   │   │
 │ Timer            │   │          │ Timer            │   │
 └──────────────────┘   │          └──────────────────┘   │
          |  Next ───────┘                  |  Next ───────┘
```

WDT Sample Program

Enable WDT
    1. Enable configuration
            -O 2E 87
             -O 2E 87

    2. Select Logic device:
            -O 2E 07
            -O 2F 08

    3. WDT Device Enable
            -O 2E 30
            -O 2F 01

    4. Set timer unit
            -O 2E F0
            -O 2F 00 ➔ (00: Sec; 08: Minute)

    5. Set base timer:
            -O 2E F1
            -O 2F 0A ➔ Set Reset Time (Ex.0A:10 Sec)
Disable WDT
    1. Enable configuration
             -O 2E 87
             -O 2E 87

    2. Select Logic device:
            -O 2E 07
            -O 2F 08

    3. WDT Device Disable
            -O 2E 30
            -O 2F 00

Digital I/O Software Programming

- I2C to GPIO PCA9535PW GPIO
- I2C address: 0b01000000.

Command byte

The command byte is the first byte to follow the address byte during a write transmission. It is used as a pointer to determine which of the following registers will be written or read.

Table 4.   Command byte

Command	Register
0	Input port 0
1	Input port 1
2	Output port 0
3	Output port 1
4	Polarity Inversion port 0
5	Polarity Inversion port 1
6	Configuration port 0
7	Configuration port 1

Registers 0 and 1: Input port registers

This register is an input-only port. It reflects the incoming logic levels of the pins, regardless of whether the pin is defined as an input or an output by Register 3. Writes to this register have no effect.

The default value 'X' is determined by the externally applied logic level.

Table 5.   Input port 0 Register

Bit	7	6	5	4	3	2	1	0
Symbol	I0.7	I0.6	I0.5	I0.4	I0.3	I0.2	I0.1	I0.0
Default	X	X	X	X	X	X	X	X

Table 6.   Input port 1 register

Bit	7	6	5	4	3	2	1	0
Symbol	I1.7	I1.6	I1.5	I1.4	I1.3	I1.2	I1.1	I1.0
Default	X	X	X	X	X	X	X	X

Registers 2 and 3: Output port registers

This register is an output-only port. It reflects the outgoing logic levels of the pins defined as outputs by Registers 6 and 7. Bit values in this register have no effect on pins defined as inputs. In turn, reads from this register reflect the value that is in the flip-flop controlling the output selection, **not** the actual pin value.

Table 7.   Output port 0 register

Bit	7	6	5	4	3	2	1	0
Symbol	O0.7	O0.6	O0.5	O0.4	O0.3	O0.2	O0.1	O0.0
Default	1	1	1	1	1	1	1	1

Table 8.   Output port 1 register

Bit	7	6	5	4	3	2	1	0
Symbol	O1.7	O1.6	O1.5	O1.4	O1.3	O1.2	O1.1	O1.0
Default	1	1	1	1	1	1	1	1

Registers 4 and 5: Polarity Inversion registers

This register allows the user to invert the polarity of the Input port register data. If a bit in this register is set (written with '1'), the Input port data polarity is inverted. If a bit in this register is cleared (written with a '0'), the Input port data polarity is retained.

Table 9.   Polarity Inversion port 0 register

Bit	7	6	5	4	3	2	1	0
Symbol	N0.7	N0.6	N0.5	N0.4	N0.3	N0.2	N0.1	N0.0
Default	0	0	0	0	0	0	0	0

Table 10.   Polarity Inversion port 1 register

Bit	7	6	5	4	3	2	1	0
Symbol	N1.7	N1.6	N1.5	N1.4	N1.3	N1.2	N1.1	N1.0
Default	0	0	0	0	0	0	0	0

Registers 6 and 7: Configuration registers

This register configures the directions of the I/O pins. If a bit in this register is set (written with '1'), the corresponding port pin is enabled as an input with high-impedance output driver. If a bit in this register is cleared (written with '0'), the corresponding port pin is enabled as an output. At reset, the device's ports are inputs.

Table 11. Configuration port 0 register

Bit	7	6	5	4	3	2	1	0
Symbol	C0.7	C0.6	C0.5	C0.4	C0.3	C0.2	C0.1	C0.0
Default	1	1	1	1	1	1	1	1

Table 12. Configuration port 1 register

Bit	7	6	5	4	3	2	1	0
Symbol	C1.7	C1.6	C1.5	C1.4	C1.3	C1.2	C1.1	C1.0
Default	1	1	1	1	1	1	1	1