DSB320-842 Series

Digital Signage Media Player

User's Manual

RoHS

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Safety Approvals

CE Marking

◆ FCC Class A

◆ **FCC Compliance**

This equipment has been tested in compliance with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are meant to provide reasonable protection against harmful interference in a residential installation. If not installed and used in accordance with proper instructions, this equipment might generate or radiate radio frequency energy and cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following methods:

1. Increase the separation between the equipment and receiver.

2. Connect the equipment to another outlet of a circuit that doesn't connect with the receiver.

3. Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with the emission limits.

Safety Precautions

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

1. The DSB320-842 series does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.

2. Be sure to ground yourself to prevent static charge when installing the 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.

3. Disconnect the power cord from the DSB320-842 series before any installation. Be sure both the system and external devices are turned OFF. A sudden surge of power could ruin sensitive components that the DSB320-842 series must be properly grounded.

4. Make sure it is the correct voltage of the power source before connecting the equipment to the power outlet.

5. The brightness of the flat panel display will be getting weaker as a result of frequent usage. However, the operating period varies depending on the application environment.

6. The digital signage player is not susceptible to shock or vibration. When assembling the DSB320-842 series, make sure it is securely installed.

7. Do not leave this equipment in an uncontrolled environment where the storage temperature is below 0℃ or above 40℃. It may damage the equipment.

8. External equipment intended for connection to signal input/out or other connectors shall comply with relevant UL/IEC standard.

9. Do not open the back cover of the system. 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 your body.

    ➢ When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.

Scrap Computer Recycling

If the computer equipments need the maintenance or are beyond repair, we strongly recommended that you should inform your Axiomtek distributor as soon as possible for the suitable solution. For the computers that are no longer useful or no longer working well, please contact your Axiomtek distributor for recycling and we will make the proper arrangement.

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Table of Contents

CHAPTER 1
INTRODUCTION

This chapter contains general information and detailed specifications of the DSB320-842 series. Chapter 1 includes the following sections:

- **General Description**
- **Specification**
- **Dimensions**
- **Package List**

1.1   General Description

The fanless DSB320-842 is an embedded system that supports Intel Celeron® 4-Cores J1900 processor on board processor to provide Windows® 7, Windows® 8.1 and Windows® 7 Embedded, , suitable for the most endurable operation.

It features high performance design with full feature I/O, one 204-pin DDR3L SODIMM, and enhanced system dependability by built-in Watchdog Timer

1.2   System Specifications

1.2.1   Main CPU Board

● **CPU**

Intel® 4-Cores J1900 processor on board

● **System Chipset**

Intel® Bay trail-D

● **BIOS**

AMI ® BIOS

● **System Memory**

One socket 204-pin DDR3L SODIMM 1333 system memory max up to 8GB

Caution: please note the system memory supports DDR3L type (1.35V)

● **Wireless Module (Optional)**

Optional IEEE802.11 b/g/n, Bluetooth 2.0

1.2.2   I/O System

● **Standard I/O**

■   One HDMI port

■   One VGA port

■   Four USB ports 2.0 (front side)

■   One RS-232/422/485 (COM1)

■   One DIO (digital I/O)

■   One Power on /Off button

■   One Remote button switch

■   Two Antenna hole

■   Two Audio phone jack (MIC-IN, Line-OUT)

■   One RJ-45 connector for 10/100/1000Base-T Ethernet

■   One 12V DC Jack for power input connector

● **Expansion**

One half-size PCI Express Mini Card slot (SCN1) is equipped for optional add on such as wireless LAN card (802.11 b/g/n connections, GPS, Bluetooth)

One SIM slot (SCN3)

● **Storage**

One full size PCI Express Mini Card slot (SCN2) is equipped for mSATA storage

1.2.3 System Specification

● **Watchdog Timer**

Reset supported; 255 levels, 1~255 sec.

● **Power Supply**

External 12V@5A, 60W AC/DC power adapter

● **Operation Temperature**

0℃ ~ 40℃ (32 ℉ ~ 104℉)

● **Storage Temperature**

-20℃ ~ 80℃ (-4 ℉ ~ 176℉)

● **Humidity**

10% ~ 90% (non-condensation)

● **Weight**

1.5 kg without package

2.5 kg with package

● **Dimensions**

180.7 mm (7.11")(W) x 128 mm(5.04") x 34.7 mm (1.37")

All specifications and images are subject to change without notice.

Note

1.3   Mechanical Assembly

1.3.1   System Dimension

This diagram shows you dimensions and outlines of the DSB320-842.
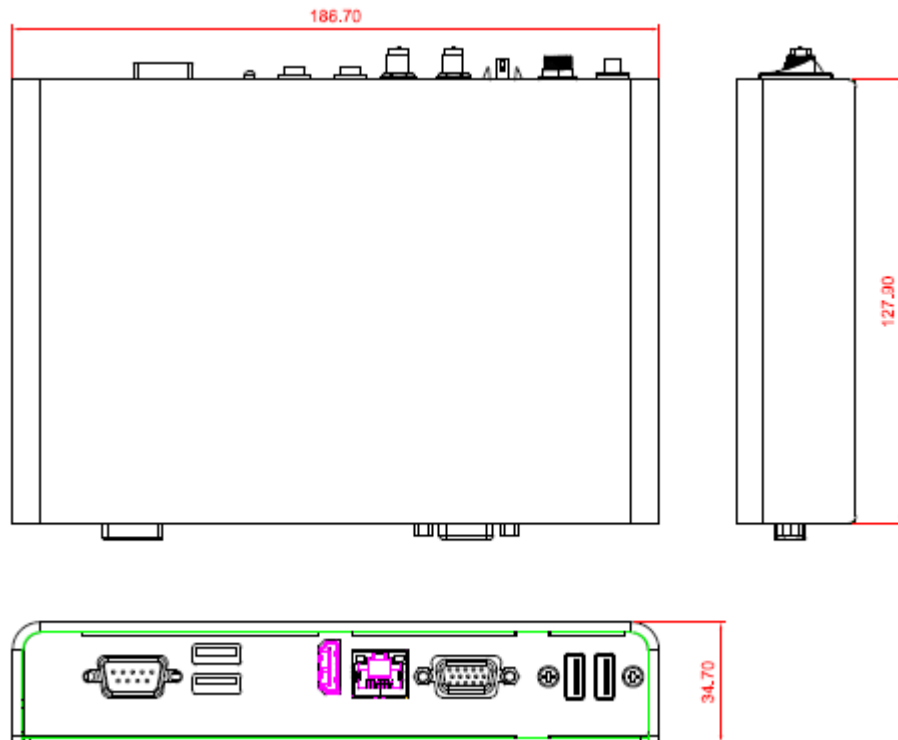
1.3.2 Wall mount , VESA Bracket and TV Rack Bracket Dimension

Wall mount Dimension
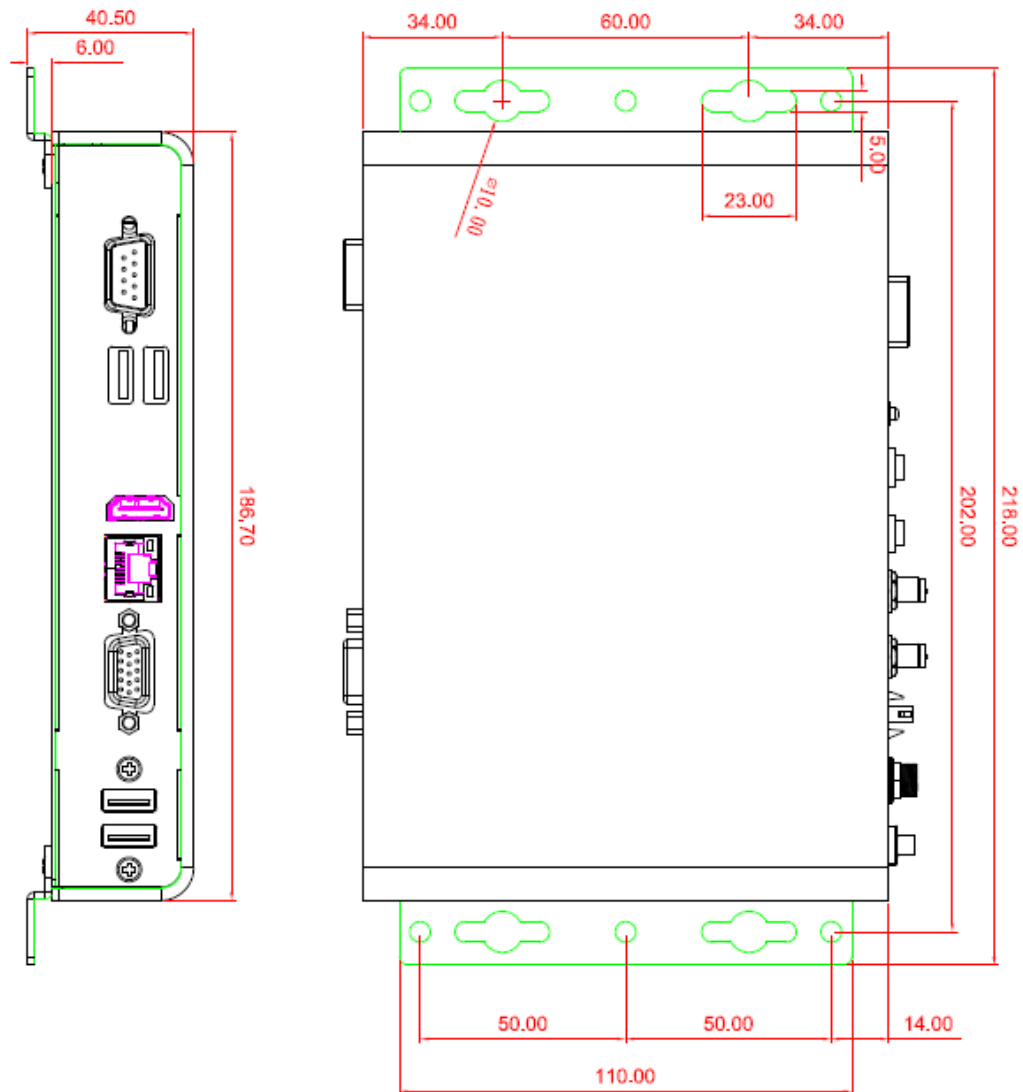
VESA Mount Dimension
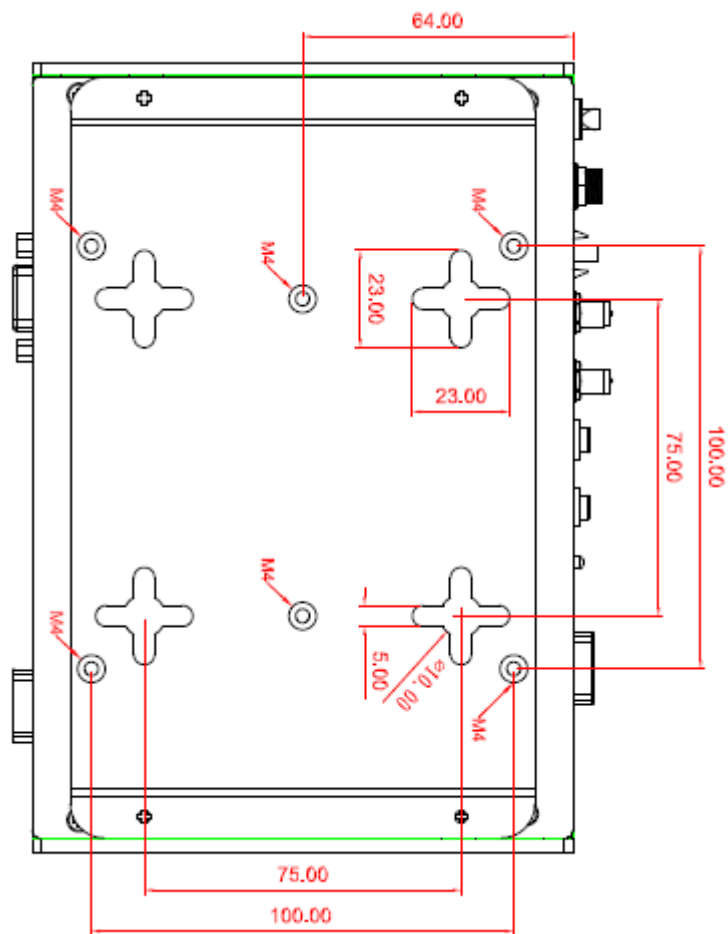
1.3.3 I/O outlet

The following figures show you the locations of the DSB320-842 I/O outlets.

● **Front View drawing**
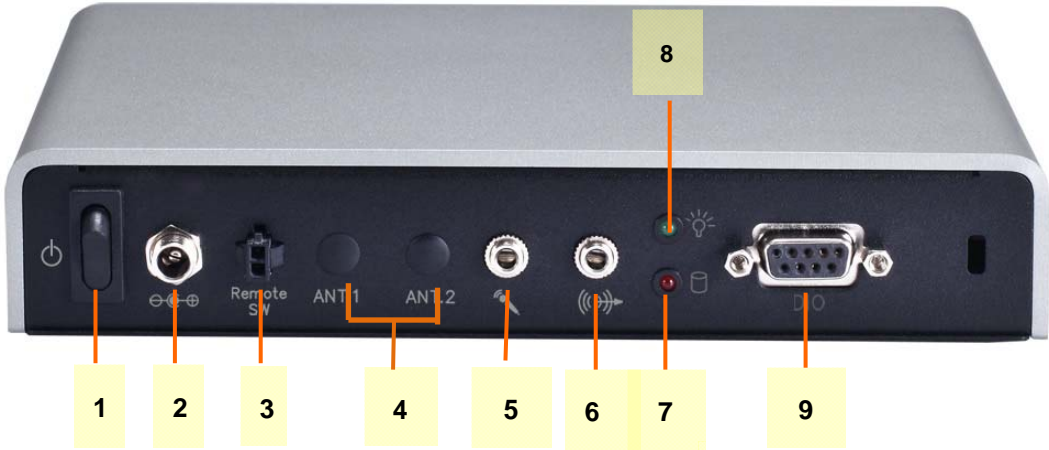
● **Rear View drawing**
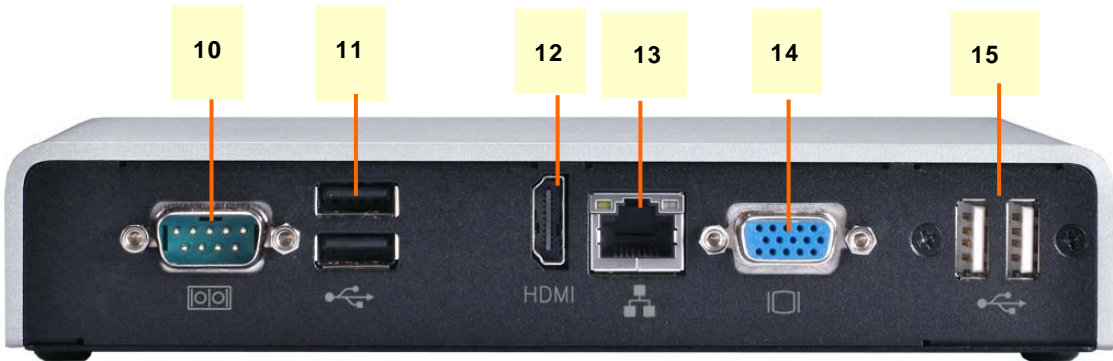
No.	Connector	No.	Connector
1	Power on/off button	9	Digital I/O (DIO)
2	12Vdc in	10	RS-232/422/485 (COM 1)
3	Remote button switch	11	USB 2.0 x2
4	Antenna(optional)	12	HDMI output
5	Audio (Mic –in)	13	RJ45
6	Audio (Line-out)	14	VGA output
7	Storage indicator	15	USB 2.0 x2
8	Power indicator		

1.4   Package List

When you receive the DSB320-842, the bundled package should contain the following items:

● **DSB320-842 System Unit x 1**

● **CD x 1 (For Driver and User's Manual)**

● **2 pin remote button switch (1 meter) x 1**

● **Power Adapter x 1 ;Power Cord x 1**

● **Plastic Stand for stack up x 4**

● **Wall-mount Brackets (optional)**

● **TV –rack Bracket x 1 pair (2 pcs) (optional)**

If you cannot find the package or any items are missing, please contact Axiomtek distributors immediately.

CHAPTER 2
HARDWARE INSTALLATION

The DSB320-842 is convenient for your various hardware configurations, such as storage, memory module,

The chapter 2 will show you how to install the hardware. It includes:

- **Memory Module**

- **Storage (mSATA)**

- **Wireless Modules**

- **3G Modules**

- **Wall Mount (Optional)**

- **VESA Mount (Optional)**

- **TV Rack (Optional)**

2.1 Installing the DRAM

Step 1 Installing the DRAM: Turn off the system, and unplug the power cord.

Step 2 Turn the system upside down to locate screws at the Bottom, loosen screws and remove the bottom cover

Step 3 **Place the memory module into the socket and press it firmly. The socket latches are levered upwards and clipped on to the edges of the DIMM.**

Step 4 Push the module down, until it is firmly seated by locking two latches on the sides.
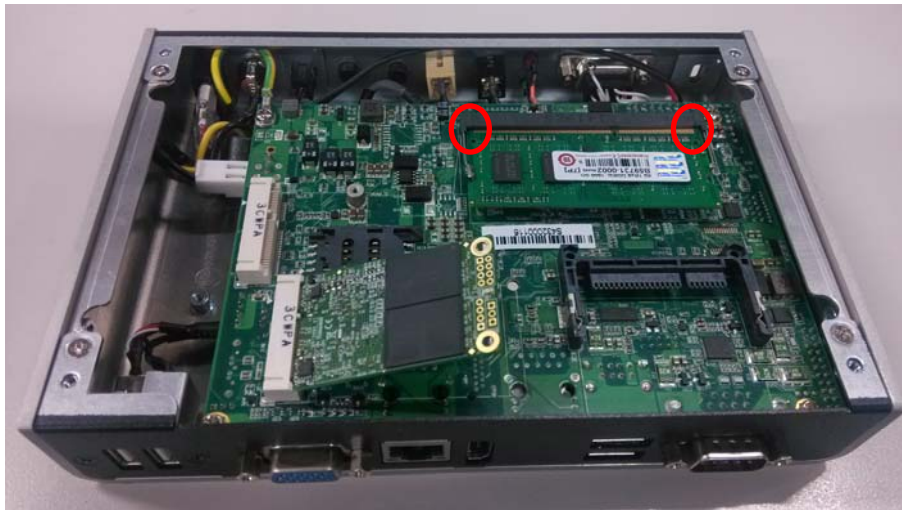
2.2 Installing mSATA

Step1 Installing the mSATA : Place the mSATA module into the socket and press it firmly down until it is fully located.

Step 2 Push the module down, until it is firmly seated by locking two latches on the sides, and then fix the mSATA with screws with image illustrated

Step3 Close the cover to the chassis, and fasten all screws.

2.3   Installing the Wireless Modules

The DSB320-842 series provides two Mini card slot for user to install one wireless LAN card. When installing the wireless LAN card, refer to the following instructions and illustration

Step 1   Turn off the system, and unplug the power cord. And then turn the system up side down to locate screws at the Bottom, loosen screws.

Step 2   Remove the bottom cover and install the Wifi module to the socket per illustrated.

Step 3   Press it firmly down until it is fully located and then fasten the screw per illustrated.

Step 4   Find the Antenna cable and connect it with wireless LAN card.

Screw the antenna connector at expansion I/O side and Install the antenna on the wireless LAN card

Step 5   Assembly the back cover back and fasten all screws.

2.4   Installing the 3G Modules

The DSB320-842 series provides one Mini card slot for user to install one 3G module. When installing the 3G module, refer to the following instructions and illustration

Step 1   Turn off the system, and unplug the power cord.

Step 2   Remove the cover. and loosen the screws on both sides of the system. Loosen the DC jack screw on rear I/O.

Step 3   Install SIM Card module. Place the SIM Card module into the socket and press it firmly down until it is fully located.

Step 4   Install 3G module. Place the 3G module into the socket and press it firmly down, then affix the screws per illustrated.

Step 5   Fasten and fix the 3G module with screw per illustrated.

Step 6 **Find the Antenna cable and connect it with 3G module.**

Screw the antenna connector at expansion I/O side and Install the antenna on the 3G module

2.5   Installing the Wall Mount (Optional)

The DSB320-842 provides wall Mount that customers can install as below:

Step 1   Prepare Wall Mount assembling components (screws and bracket) ready.

Step 2   Fix the wall mount to the correct location, and fasten all screws.

Step 3   Fix the wall mount to the correct location, and fasten all screws.

2.6   Installing the VESA Mount (optional)

The DSB320-842 provides VESA Mount that customers can install as below:

Step 1   Prepare VESA Mount assembling components (screws and VESA mount bracket) ready.

Step 2   After loosing the screw of four footpads at the bottom of DSB320-842, and then put the DSB320-842 under VESA mount kit.

Step 3   Fasten screws of VESA mount kit.
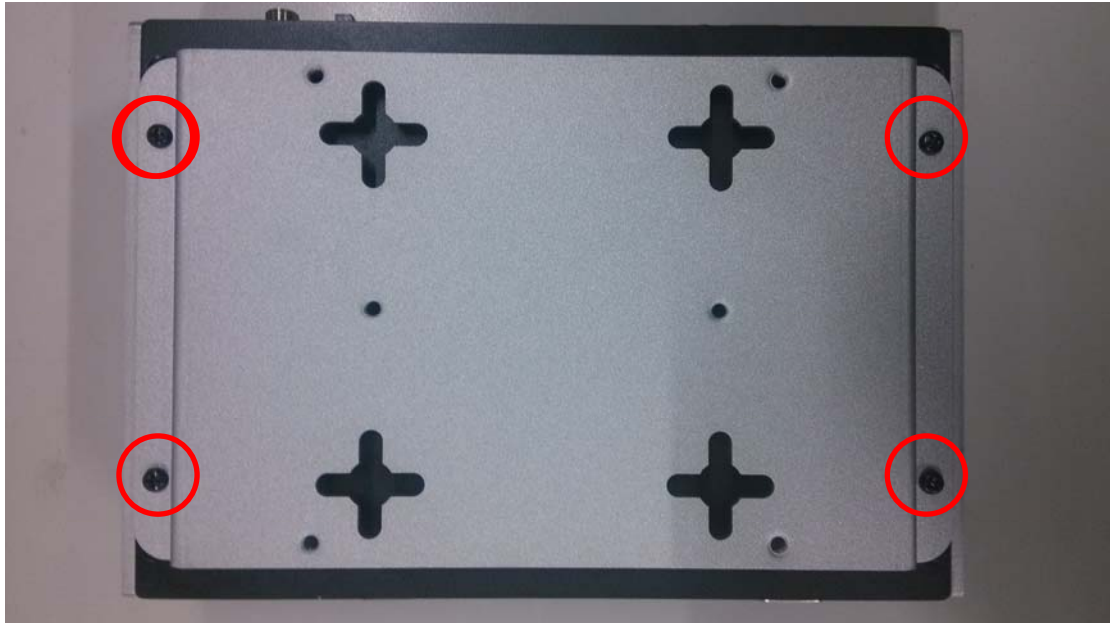
Step 4   Decide   correct   mounting   direction.DSB320-842   supports   75x75mm VESA mount.
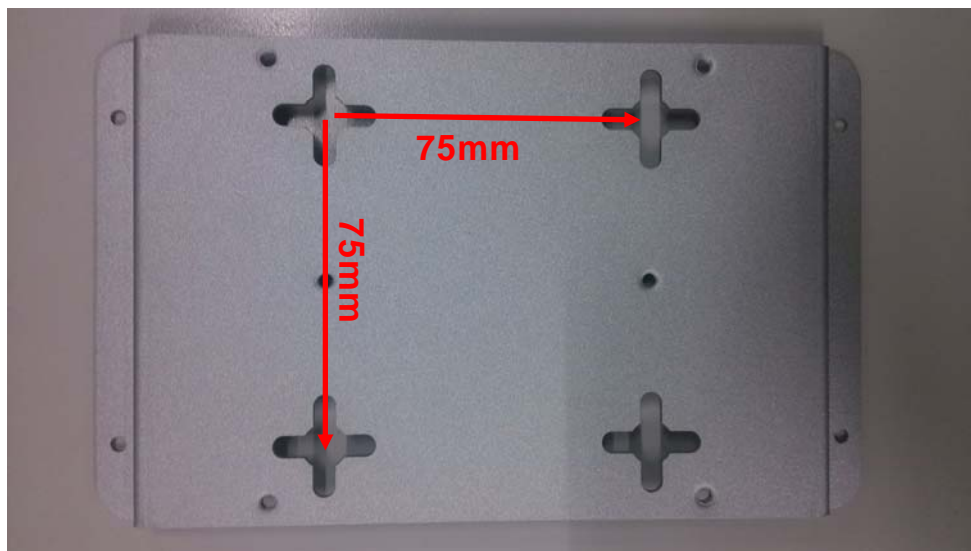
2.7   Installing the TV Rack (optional)

The DSB320-842 provides VESA Mount that customers can install as below:

Step 1   Prepare TV rack (2 pcs as 1 set) assembling components (screws and VESA mount bracket) ready.

Step 2   Loose the screw of four footpads at the bottom of DSB320-842, and remove footpad.

Step 3 Put the DSB320-842 under TV rack kit and fasten screws per illustrated.
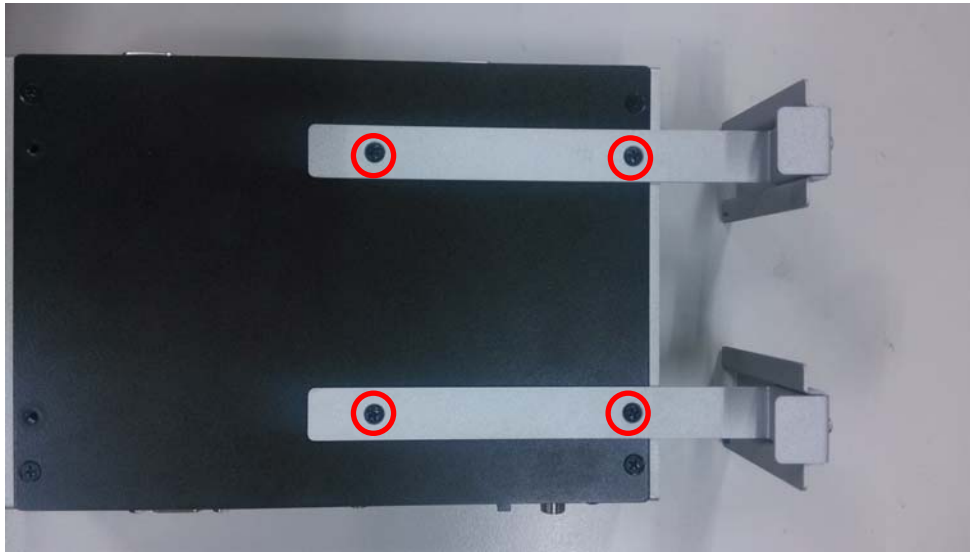
Step 4   Depends on the thickness of the display or TV set, adjust the bracket and fasten the screws (per illustrated) in order to fit and hang on the TV panel, per illustrated

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CHAPTER 3
JUMPER SETTINGS & CONNECTOR

Proper jumper settings configure the DSB320-842 to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

3.1   Connectors

Connectors connect this board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected.

Here is a summary table shows you all connectors on the board.

Top side

Button side

SSODIMM1

SCN1

SCN3

SCN2
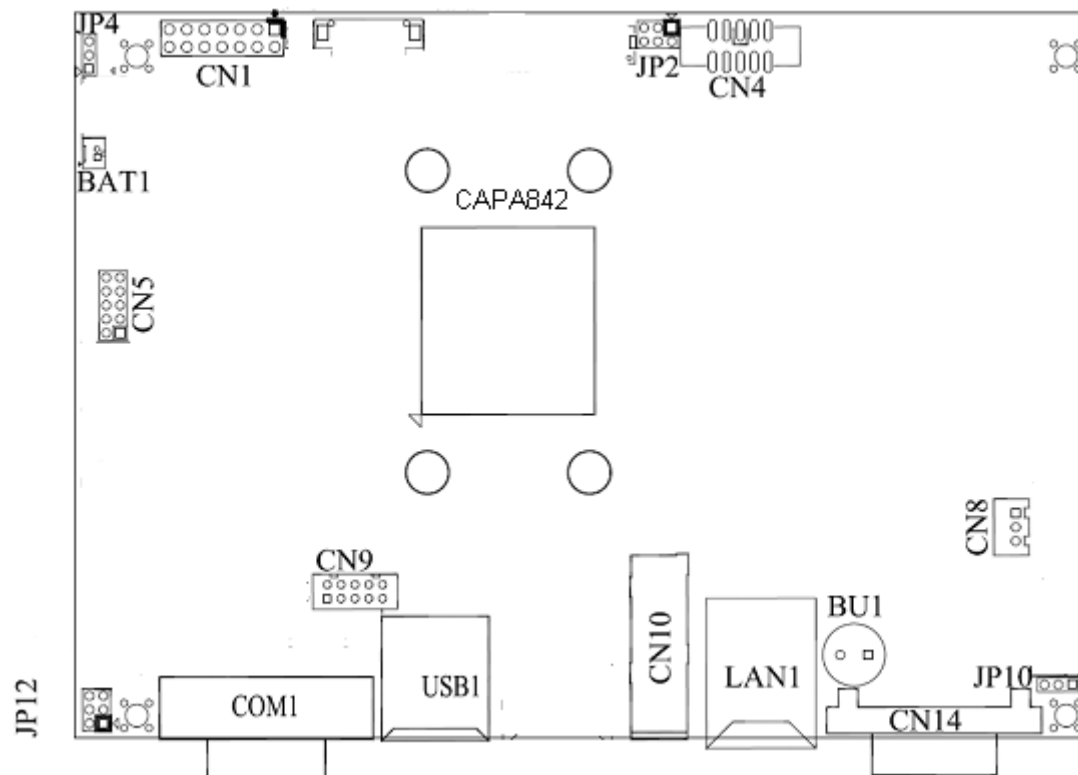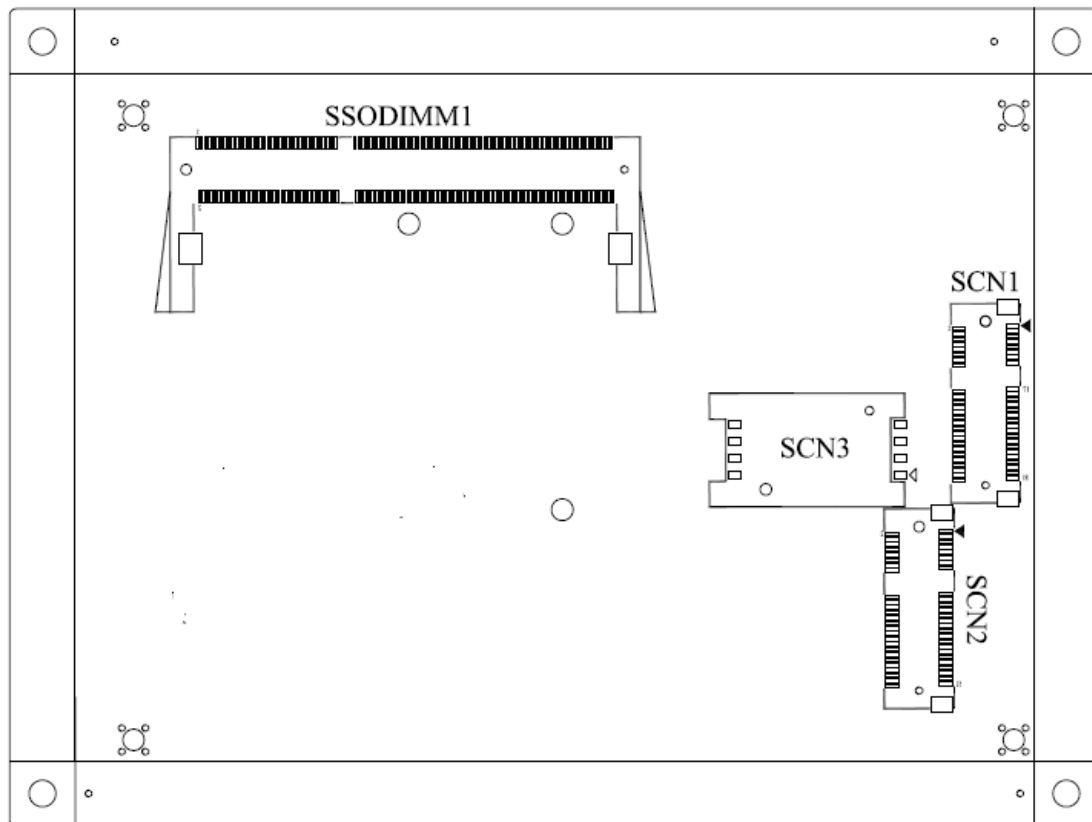
3.2 Jumper Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close. And remove jumper clip from 2 jumper pins to open. Below illustration shows how to set up jumper.

jumper clip   open

close   pin 1-2 close   all open
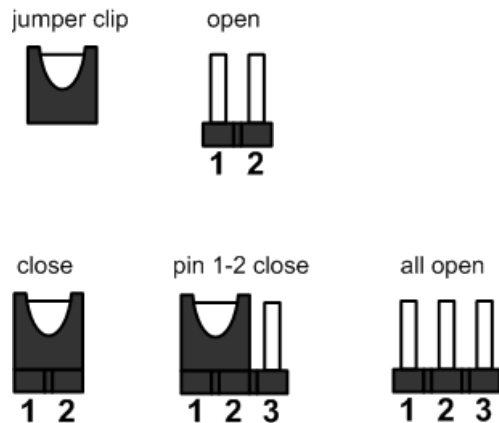
Properly configure jumper settings on the CAPA841/842 to meet your application purpose. Below you can find a summary table of all jumpers and onboard default settings.

> *Once the default jumper setting needs to be changed, please do it under power-off condition.*
>
> **Note**

Jumper	Description		Jumper Setting
JP2	Audio Output Selection (Line out)		1-3, 2-4 Close
JP4	Restore BIOS Optimal Defaults Default: Normal Operation		1-2 Close
JP10	Auto Power On Default: Disable		1-2 Close
JP12	COM1 Data/Power Selection Default: RS-232 Data	COM1 Pin 1: DCD	3-5 Close
		COM1 Pin 9: RI	4-6 Close

3.2.1   Audio Output Selection (JP2)

Use this jumper to select line out or speaker out as source of audio output on audio connector. When speaker out is used, it delivers 1W/channel continuous at 8Ω loads .there is no speaker out function available.

Function	Setting
Line out	1-3, 2-4 close
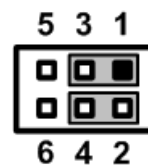
3.2.2   Restore BIOS Optimal Defaults (JP4)

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.

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

3.2.3   Auto Power On (JP10)

If JP10 is enabled for AC power input, the system will be automatically power on without pressing soft power button. If JP10 is disabled for AC power input, it is necessary to manually press soft power button to power on the system.

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

> ***This function is similar to the feature of power on after power failure, which is controlled by hardware circuitry instead of BIOS.***

Note

3.2.4   COM1 Data/Power Selection (JP12)

The COM1 port has +5V level power capability on DCD and +12V level on RI by setting this jumper. When this port is set to +5V or +12V level, please make sure its communication mode is RS-232. You can change the communication mode (RS-232/422/485) via BIOS setting, see section 4.4.

Function	Setting
Power: Set COM1 pin 1 to +5V level	1-3 close
Data: Set COM1 pin 1 to DCD (Default)	3-5 close
Power: Set COM1 pin 9 to +12V level	2-4 close
Data: Set COM1 pin 9 to RI (Default)	4-6 close
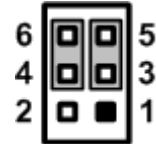
3.3   Connectors

Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors and button on the **DSB320-842** Series.

Connector	Description
3.3.1	DC Power Jack Connector
3.3.2	Audio Connector
3.3.3	Digital I/O Port Connector
3.3.4	SMBus Connector (CN8)
3.3.5	USB Port 2 and 3
3.3.6	HDMI Connector
3.3.7	VGA Connector
3.3.8	USB Port 0 and 1
3.3.9	Ethernet Connector (LAN1)
3.3.10	COM Port Connector (COM1)
3.3.11	ATX Power ON/OFF Button
3.3.12	Half-size PCI-Express Mini Card Connector (SCN1)
3.3.13	Full-size PCI-Express Mini Card Connector (SCN2)
3.3.14	SIM Card Slot (SCN3)

3.3.1 DC Power Jack Connector

The system supports a DC12V only DC-in Jack connector for system power input. Connect it to the power AC-DC 60W Adapter

Pin	Signal
1	+12V
2	GND

3.3.2 Audio Connector

These two audio jacks ideal for Audio MIC-In and Audio Line-out.

Pin	Signal
1	Microphone In
2	Line Out
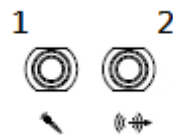
3.3.3 Digital I/O Port Connector

The onboard digital I/O has 8 bits (DIO0~7). Each bit can be set to function as input or output by software programming. The BIOS default settings are 3 inputs and 5 outputs

Pin	Description
1	DO0
2	DO1
3	DO2
4	DO3
5	DO4
6	DI0
7	DI1
8	DI2
9	GND

Digital I/O
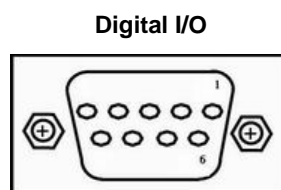
3.3.4   SMBus Connector (CN8)

This connector is for SMBus interface. The SMBus (System Management Bus) is a simple 2-wire bus for the purpose of lightweight communication.

Pin	Signal
1	CLK
2	DATA
3	GND
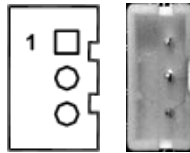
3.3.5   USB Port (USB2 & 3)

The Universal Serial Bus (compliant with USB 2.0 (480Mbps)) connector on the rear I/O. It is commonly used for installing USB peripherals such as keyboard, mouse, scanner, etc.

Pin	Signal USB Port 2	Pin	Signal USB Port 3
1	USB VCC (+5V level)	5	USB VCC (+5V level)
2	USB #0_D-	6	USB #1_D-
3	USB #0_D+	7	USB #1_D+
4	Ground (GND)	8	Ground (GND)
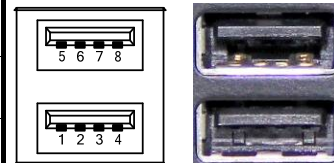
3.3.6   HDMI Connector

The HDMI (High-Definition Multimedia Interface) is a compact digital interface which is capable of transmitting high-definition video and high-resolution audio over a single cable. Its interface is available through connector CN10.

Pin	Signal	Pin	Signal
1	HDMI OUT_DATA2+	2	GND
3	HDMI OUT_DATA2-	4	HDMI OUT_DATA1+
5	GND	6	HDMI OUT_DATA1-
7	HDMI OUT_DATA0+	8	GND
9	HDMI OUT_DATA0-	10	HDMI OUT_Clock+
11	GND	12	HDMI OUT_Clock-
13	CEC	14	N.C.
15	HDMI OUT_SCL	16	HDMI OUT_SDA
17	GND	18	+5V
19	HDMI_HTPLG		
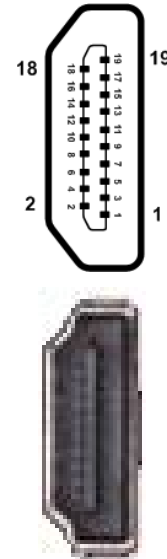
3.3.7   VGA Connector

This is a 15-pin D-Sub connector which is commonly used for VGA display. This VGA interface configuration can be configured via software utility.

Pin	Signal	Pin	Signal
1	Red	2	Green
3	Blue	4	N.C.
5	GND	6	DETECT
7	GND	8	GND
9	VCC	10	GND
11	N.C.	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync
15	DDC CLK		
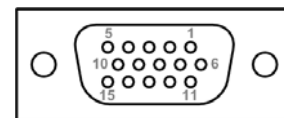
3.3.8 USB Port (USB0 & 1)

The Universal Serial Bus (compliant with USB 2.0 (480Mbps)) connector on the rear I/O. It is commonly used for installing USB peripherals such as keyboard, mouse, scanner, etc.

Pin	Signal USB Port 0	Pin	Signal USB Port 1
1	USB VCC (+5V level)	5	USB VCC (+5V level)
2	USB #0_D-	6	USB #1_D-
3	USB #0_D+	7	USB #1_D+
4	Ground (GND)	8	Ground (GND)
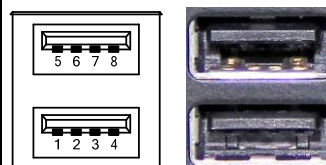
3.3.9 Ethernet Connector (LAN1)

The board has two RJ-45 connectors: LAN1. 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.

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)		
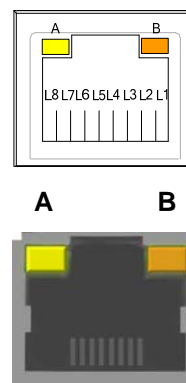
3.3.10 COM Port Connector (COM1)

This is a standard DB-9 connector. It is equipped with +5V level power capability on DCD and +12V level on RI by setting JP12 (see section 2.3.9). The pin assignments of RS-232/RS-422/RS-485 are listed in table below. If you need COM1 port to support RS-422 or RS-485, please refer to BIOS setting in section 4.4.

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	No use	No use
6	DSR	No use	No use
7	RTS	No use	No use
8	CTS	No use	No use
9	RI	No use	No use

COM1
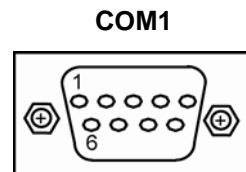
3.3.11 ATX Power ON/OFF Button

The ATX power button is on the I/O side. It can allow users to control DSB320-842-FL power on/off.

Pin	Signal
1	OFF (Standby)
2	Power ON
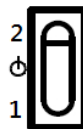
3.3.12 Half-size PCI-Express Mini Card Slot (SCN1)

The SCN1 is a half-size PCI-Express Mini Card connector. It supports the PCI-Express Mini Cards which are applied to either PCI-Express x1 or USB. It complies with PCI-Express Mini Card Spec. V1.2.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	No use
9	GND	10	No use
11	REFCLK-	12	No use
13	REFCLK+	14	No use
15	GND	16	No use
17	No use	18	GND
19	No use	20	W_DISABLE#
21	GND	22	PERST#
23	PE_RXN3	24	+3.3VSB
25	PE_RXP3	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN3	32	SMB_DATA
33	PE_TXP3	34	GND
35	GND	36	USB_D8-
37	GND	38	USB_D8+
39	+3.3VSB	40	GND
41	+3.3VSB	42	No use
43	GND	44	No use
45	No use	46	No use
47	No use	48	+1.5V
49	No use	50	GND
51	No use	52	+3.3VSB
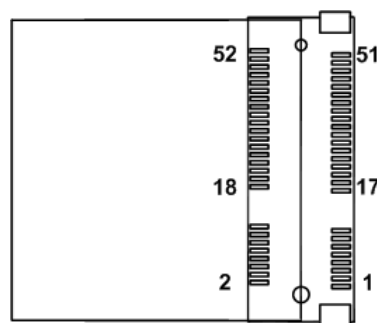
3.3.13 Full-size PCI-Express Mini Card Slot (SCN2)

This is a PCI-Express Mini Card connector on the bottom side applying to either PCI-Express or USB 2.0 or SATA (mSATA). It complies with PCI-Express Mini Card Spec. V1.2. It can also support mSATA cards.

In this system, the SCN2 only supports mSATA mode for storage device.

Note

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	No use
9	GND	10	No use
11	REFCLK-	12	No use
13	REFCLK+	14	No use
15	GND	16	No use
17	No use	18	GND
19	No use	20	W_DISABLE#
21	GND	22	PERST#
23	PE_RXN3/ SATA_RXP	24	+3.3VSB
25	PE_RXP3/ SATA_RXN	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN3/ SATA_TXN	32	SMB_DATA
33	PE_TXP3/ SATA_TXP	34	GND
35	GND	36	USB_D8-
37	GND	38	USB_D8+
39	+3.3VSB	40	GND
41	+3.3VSB	42	No use
43	GND	44	No use
45	No use	46	No use
47	No use	48	+1.5V
49	No use	50	GND
51	No use	52	+3.3VSB
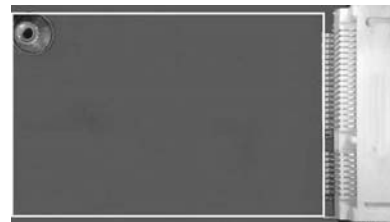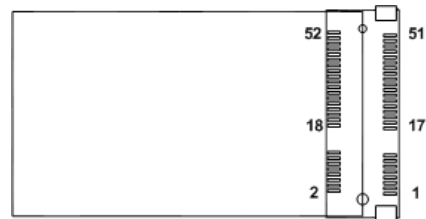
3.3.14 SIM Card Socket (SCN3)

This board has SCN3 socket on the bottom side for inserting SIM Card. In order to work properly, the SIM Card must be used together with 3G module which is inserted to SCN1 or SCN2. It is mainly used in 3G wireless network application.

Pin	Signal
1	PWR
2	RST
3	CLK
4	NC
5	GND
6	VPP
7	I/O
8	NC
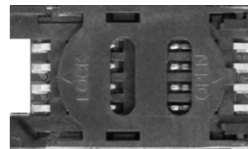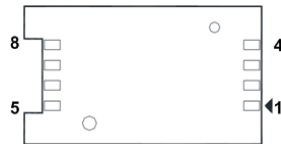
CHAPTER 4
AMI BIOS SETUP UTILITY

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash chip to save the setup information whenever the power is turned off. This chapter provides users with detailed description about how to set up basic system configuration through the AMI BIOS setup utility.

4.1   Starting

To enter the setup screens, follow the steps below:
1.   Turn on the computer and press the <Del> key immediately.
2.   After you press the <Del> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Advanced and Chipset menus.

> **Note**
>
> *If your computer cannot boot after making and saving system changes with BIOS setup, you can restore BIOS optimal defaults by setting JP4 (see section 2.3.4).*

It is strongly recommended that you should avoid changing the chipset's defaults. Both AMI and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.2   Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

Some of the navigation keys differ from one screen to another.

Note

Hot Keys	Description
→← **Left/Right**	The Left and Right <Arrow> keys allow you to select a setup screen.
↑↓ **Up/Down**	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+− **Plus/Minus**	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

4.3   Main Menu

When you first enter the setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. System Time/Date can be set up as described below. The Main BIOS setup screen is shown below.

```
Aptio Setup Utility - Copyright ( C ) 2013 American Megatrends , Inc .

Main  Advanced  Chipset  Boot  Security  Save & Exit

BIOS Information                                        Choose the system default
BIOS Version           CAPA842 XA004                    language
Build Date             09/17/2014

System Language        [English]

System Date            [Thu 10/02/2014]
System Time            [15:29:11]

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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```

- **BIOS/Memory Information**
  Display the auto-detected BIOS/memory information.

- **System Language**
  Choose the system default language.

- **System Date/Time**
  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

- **Access Level**
  Display the access level of current user.

4.4   Advanced Menu

The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- ► ACPI Settings
- ► WatchDog Timer Configuration
- ► NCT6106D Super IO Configuration
- ► NCT6106D HW Monitor
- ► S5 RTC Wake Settings
- ► CPU Configuration
- ► IDE Configuration
- ► USB Configuration

For items marked with "►", please press <Enter> for more options.

```
         Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

   Main   Advanced   Chipset   Boot   Security      Save & Exit

  ►ACPI Settings                                System ACPI Parameters.
  ►WatchDog Timer Configuration
  ►NCT6106D Super IO Configuration
  ►NCT6106D HW Monitor
  ►S5 RTC Wake Settings
  ►CPU Configuration
  ►IDE Configuration
  ►LAN Controller
  ►USB Configuration

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

         Version 2.16.1242 Copyright (C) 2013 American Megatrends, Inc.
```

● **ACPI**

```
           Aptio Setup Utility – Copyright (C) 2013 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.




                          ┌─────── ACPI Sleep State ───────┐
                          │ Suspend Disabled               │
                          │ S3 (Suspend to RAM)            │
                          │                                │
                          └────────────────────────────────┘
                                                             →←: 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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```

ACPI Sleep State

When the sleep button is pressed, the system will be in the ACPI sleep state. The default is
S3 (Suspend to RAM).

● **WatchDog Timer Configuration**
Enable/Disabled WatchDog; the default setting is disabled

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

| Main | Advanced | Chipset | Boot | Security | Save & Exit |

WatchDog Timer Configuration

WatchDog   [Disabled]

Enabled / Disabled WatchDog.

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

Version 2.16.1242 Copyright (C) 2013 American Megatrends, Inc.
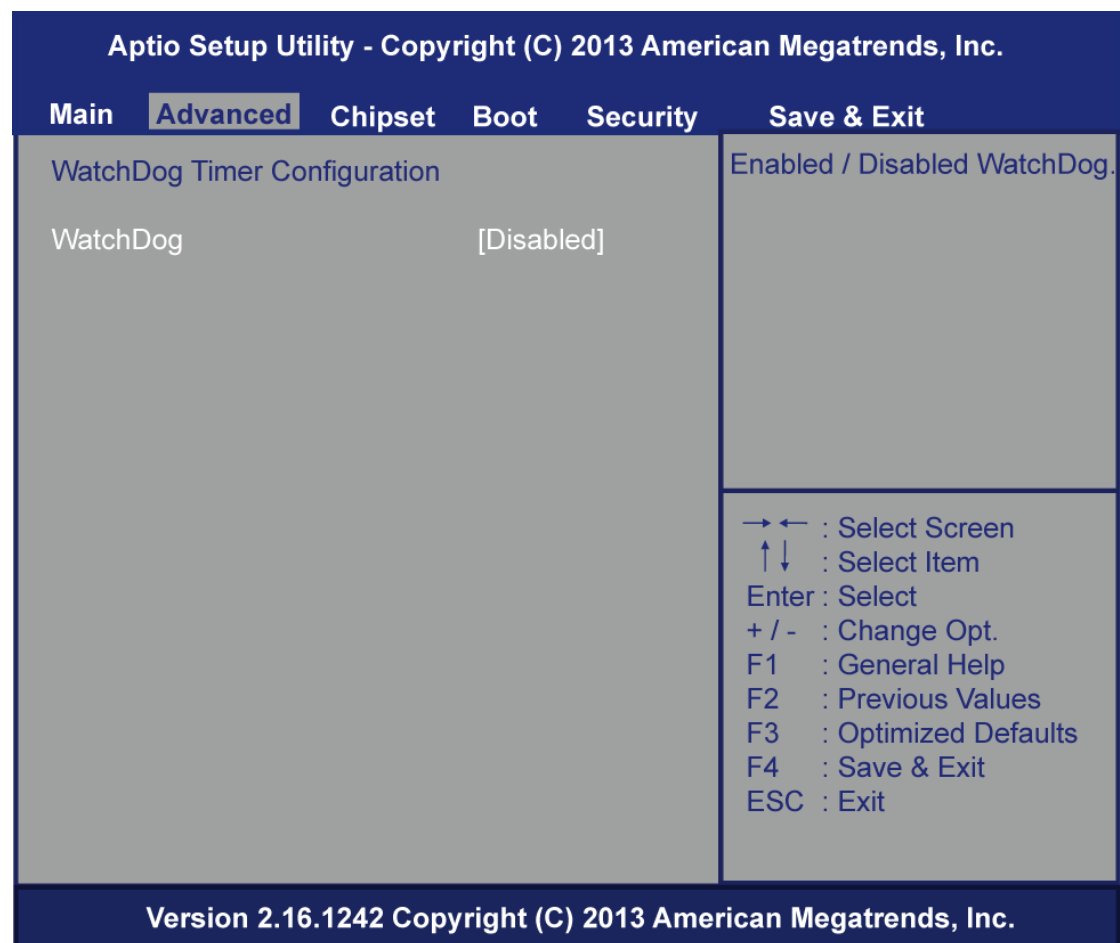
● **NCT6106D Super IO Configuration**

You can use this screen to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.

```
        Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
   Advanced

  NCT6106D Super IO Configuration                          Set Parameters of Serial Port
                                                           1 (COM1)
  Super IO Chip                    NCT6106D
 ▶Serial Port 1 (COM1)



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


        Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
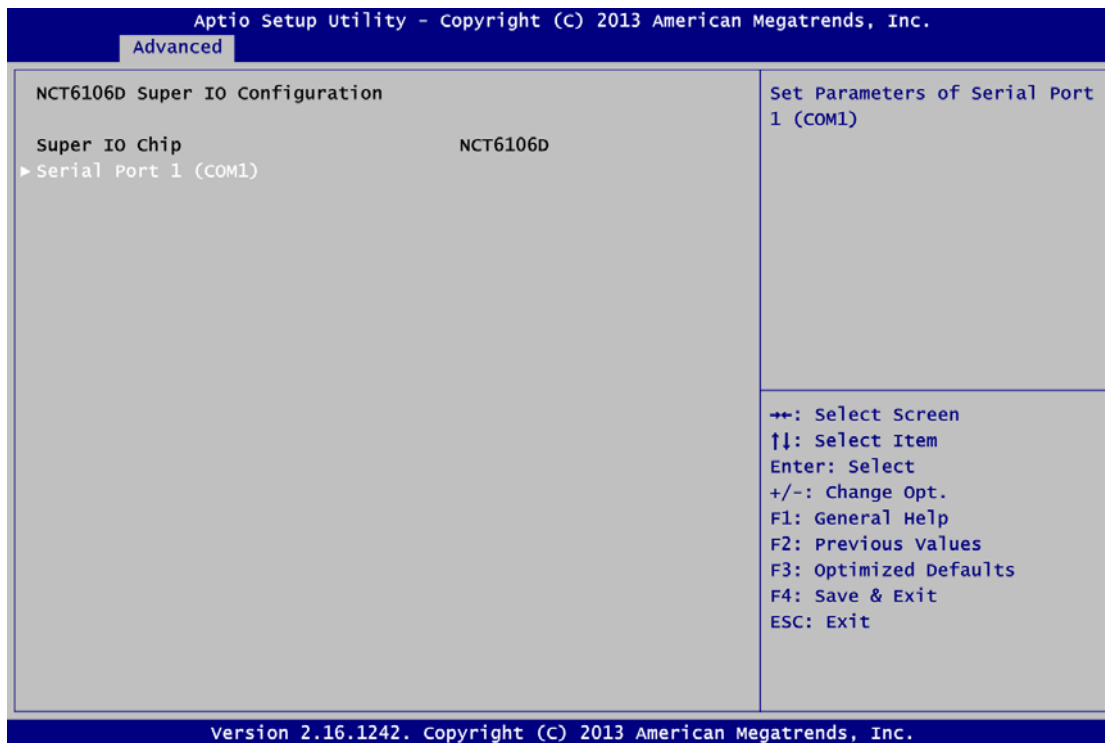
Serial Port (COM) Configuration

Use these items to set parameters related to serial port (COM)

● **Serial Port 1 (COM1) Configuration**

```
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
  Advanced

  Serial Port 1 (COM1)                               Enable or Disable Serial Port
                                                     (COM)
  Serial Port              [Enabled]
  Device Settings          IO=3F8h; IRQ=4;

  COM Port Type            [RS232]




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


      Version 2.16.1242 Copyright (C) 2013 American Megatrends, Inc.
```

Serial Port

Enable or disable serial port (COM)

COM Port Type

COM1 Supports RS-232/422/485 by your requirement, thus please follow your demand to select COM port setting under BIOS mode.

● **NCT6106D HW Monitor**

This screen monitors hardware status

```
        Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
   Advanced

 Pc Health Status

 System temperature                 : +29.5 C
 CPU temperature                    : +51.0 C
 CPU Fan Speed                      : 6308 RPM
 VCORE                              : +0.856 V
 +3.3V                              : +3.302 V
 +12V                               : +12.192 V
 +5V                                : +5.088 V




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



       Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

This screen displays the temperature of system and CPU, cooling fan speed in RPM and system voltages (VCORE, +3.3V, +12V and +5V).

● **S5 RTC Wake Setting**

Enable or disable system wake on alarm event. When enabled, System will wake on the hr:min::sec specified; the default setting is disabled

While enable RTC Wake up setting, there are two options for setting Fixed Time/Dynamic Time; While choosing Fixed Time at the BIOS and reboot the system, it will be turned on base on the fixed setting time (hr:min:sec); for DynamicTime option, system will be turned on after waiting time (minutes) which is set.

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
Wake system from S5 [Disabled]	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , System will wake on the current time + Increase minute(s)
	→← : Select Screen ↑↓ : Select Item Enter : Select + / - : Change Opt. F1 : General Help F2 : Previous Values F3 : Optimized Defaults F4 : Save & Exit ESC : Exit
Version 2.16.1242 Copyright (C) 2013 American Megatrends, Inc.	

● **CPU Configuration**

This screen shows the CPU Configuration.

```
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
   Advanced

CPU Configuration                                    Socket specific CPU Information

▶ Socket 0 CPU Information

  CPU Speed                       2001 MHz
  64-bit                          Supported

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

         Version 2.16.1242 Copyright (C) 2013 American Megatrends, Inc.
```

Socket 0 CPU Information

This item is for socket specific CPU information.

Intel Virtualization Technology

Allow a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

EIST

Enable /Disable Intel SpeedStep

● **IDE Configuration**

In the IDE Configuration menu, you can see the currently installed hardware in the SATA ports. During system boot up, the BIOS automatically detects the presence of SATA devices.

```
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
  Advanced

 IDE Configuration                              Enable / Disable Serial ATA

 Serial-ATA (SATA)          [Enabled]
 SATA Mode                  [AHCI Mode]

 Serial-ATA Port 0          [Enabled]
 Serial-ATA Port 1          [Enabled]
   SATA Switch              [mSATA]

 SATA Port 0
 Not Present                                →←  : Select Screen
                                            ↑↓  : Select Item
 SATA Port 1                                Enter : Select
 TS64GMSA370  (64.0GB)                      + / - : Change Opt.
                                            F1    : General Help
                                            F2    : Previous Values
                                            F3    : Optimized Defaults
                                            F4    : Save & Exit
                                            ESC  : Exit

          Version 2.16.1242 Copyright (C) 2013 American Megatrends, Inc.
```
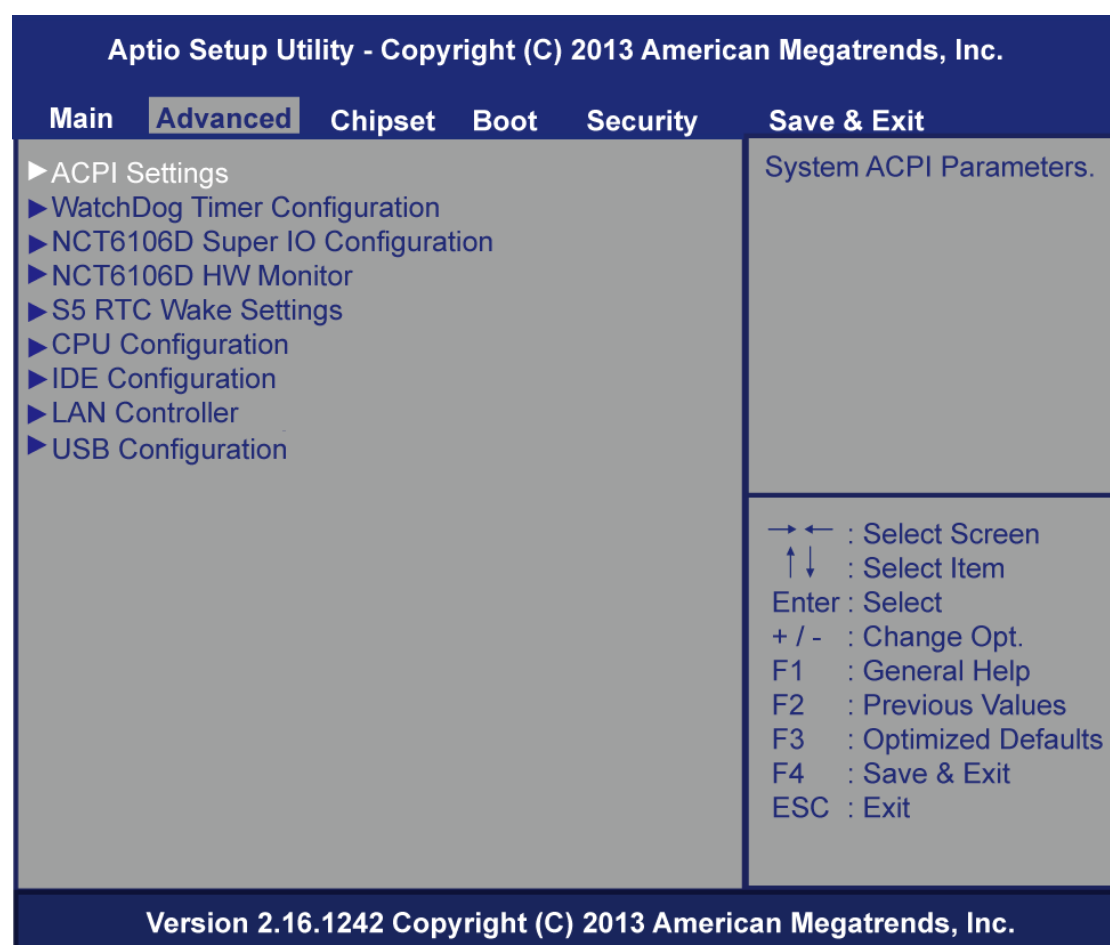
Serial-ATA (SATA)

Enable or disable the SATA Controller feature. The default is Enabled.

SATA Mode Selection

Determine how SATA controller(s) operate. Operation mode options are IDE Mode and AHCI (Advanced Host Controller Interface) Mode. The default is AHCI Mode.

Serial-ATA Port 0

Enable or disable the onboard Serial ATA port 0.

Serial-ATA Port 1

Enable or disable the onboard Serial ATA port 1

● **LAN Controller**

Enable or disable integrated LAN to wake the system; default setting is enabled
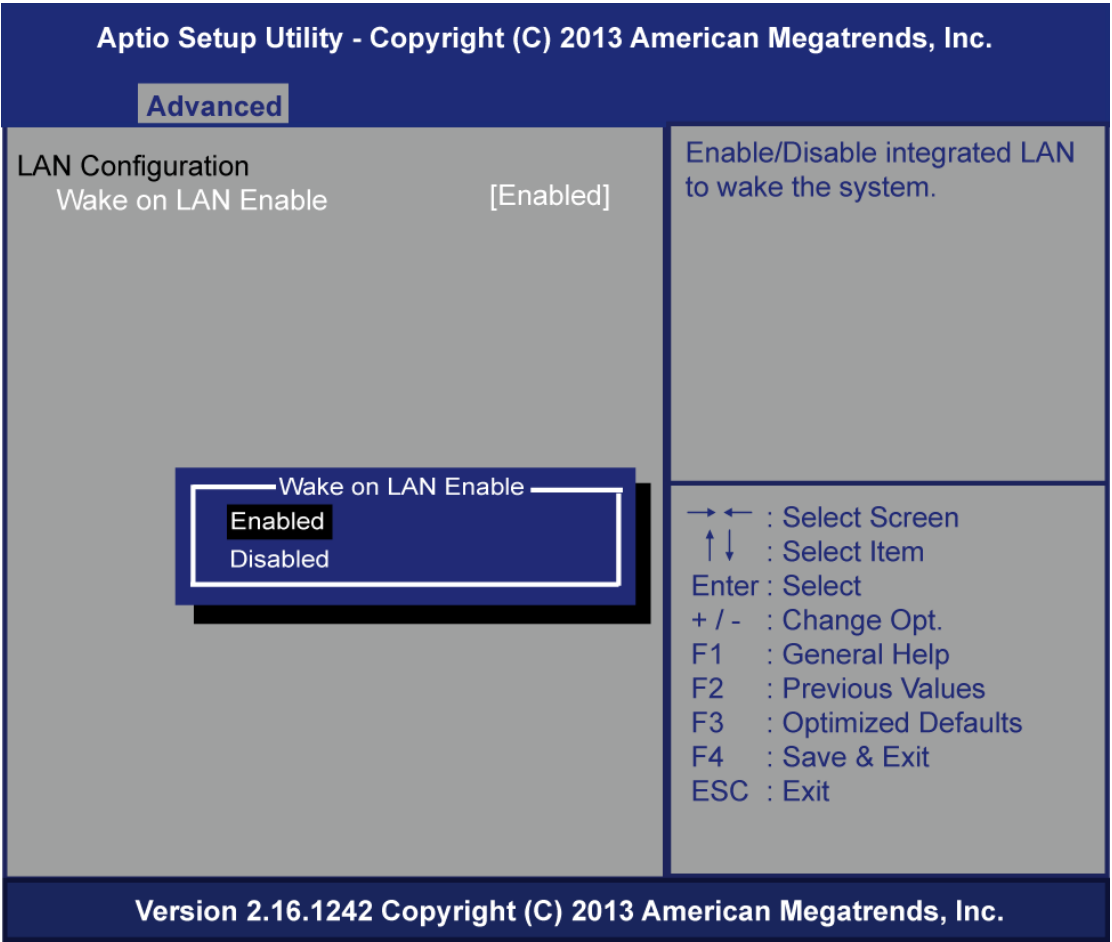
● **USB Configuration**

Enable Legacy USB support. Auto option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

Advanced	

USB Configuration	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected . DISABLE option will keep USB devices available only for EFI applications.
USB Module Version 8.10.27	
USB Devices:	
1 Keyboard, 1 Mouse, 3 Hubs	
Legacy USB Support [Enabled]	
	→← : 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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USB Devices

Display all detected USB devices.

Legacy USB Support

Use this item to enable or disable support for USB device on legacy operating system. The default setting is Enabled. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

4.5   Chipset Menu

The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:
- ►   North Bridge
- ►   South Bridge

For items marked with "►", please press <Enter> for more options.

```
          Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
  Main    Advanced   Chipset   Security   Boot   Save & Exit

 ► North Bridge                                      North Bridge Parameters
 ► South Bridge




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



          Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
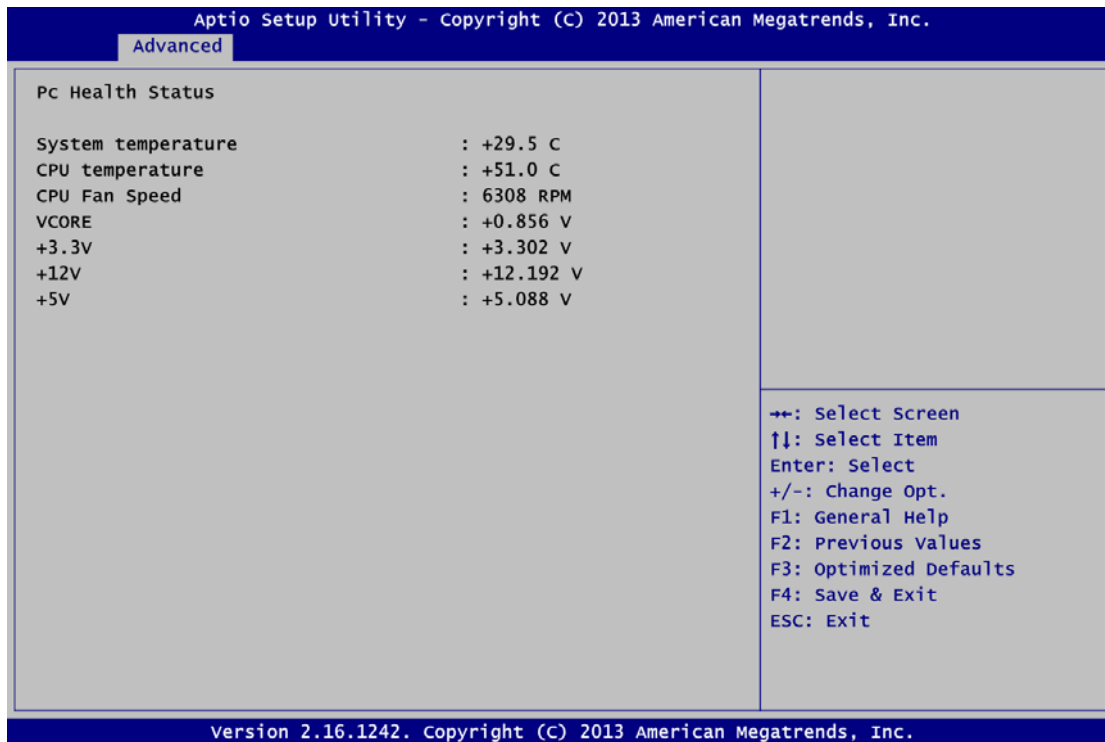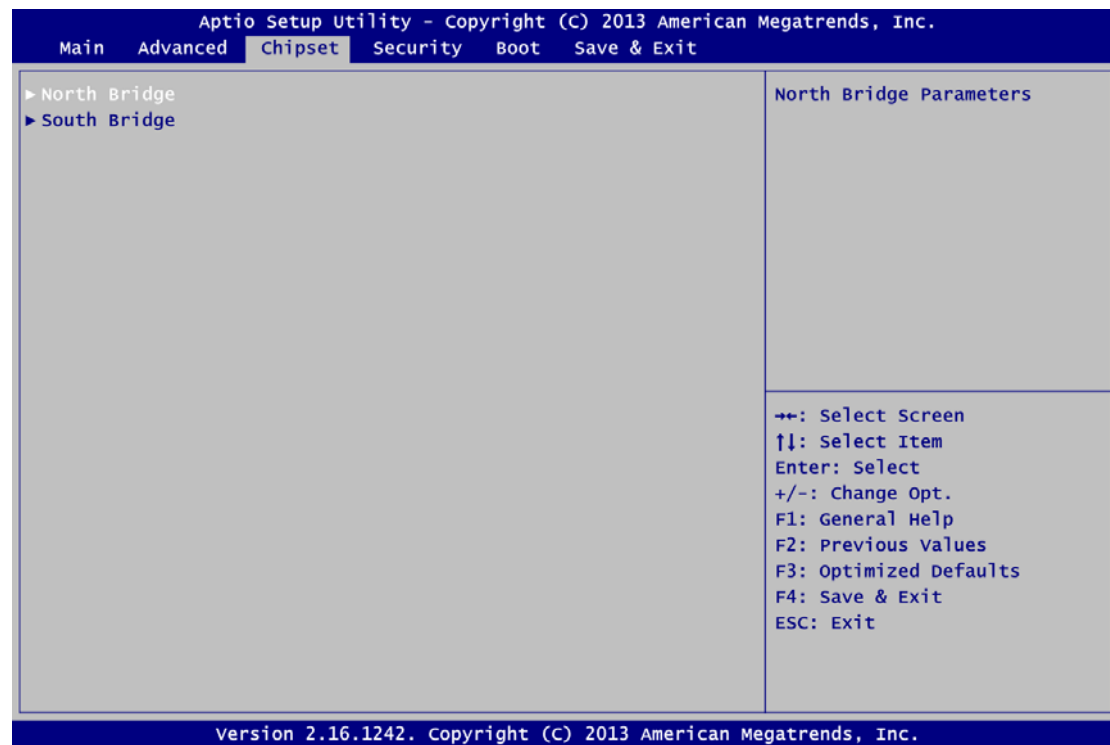
● **North Bridge**

```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

                            Chipset

 Memory Information

 Total Memory                    4096 MB (LPDDR3)
 Memory Sloto                    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 2.16.1242 Copyright (C) 2013 American Megatrends, Inc.
```

● **South Bridge**

This screen allows users to configure parameters of South Bridge chipset.

```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
            Chipset

  Audio Controller                       [Enabled]               Control Detection of the
                                                                 Azalia Device.   Disabled =
                                                                 Azalia will be unconditionally
                                                                 disabled.  Enabled = Azalia
                                                                 will be unconditionally
                                                                 Enabled.



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



            Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

Audio Controller

Control detection of the Azalia device.

Disabled - Azalia will be unconditionally disabled.

Enabled - Azalia will be unconditionally enabled.

4.6   Security Menu

The Security menu allows users to change the security settings for the system.

```
            Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
     Main    Advanced    Chipset   Security   Boot   Save & Exit

    Password Description                                      Set 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
                                                      Enter: Select
    Administrator Password                            +/-: Change Opt.
    User Password                                     F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit


            Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

Administrator Password

This item indicates whether an administrator password has been set (installed or uninstalled).

User Password

This item indicates whether an user password has been set (installed or uninstalled).

4.7   Boot Menu

The Boot menu allows users to change boot options of the system.

```
                Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main   Advanced   Chipset   Security   Boot   Save & Exit

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


  Boot Option Priorities
  Boot Option #1                    [UEFI: Built-in EFI ...]

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


                Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
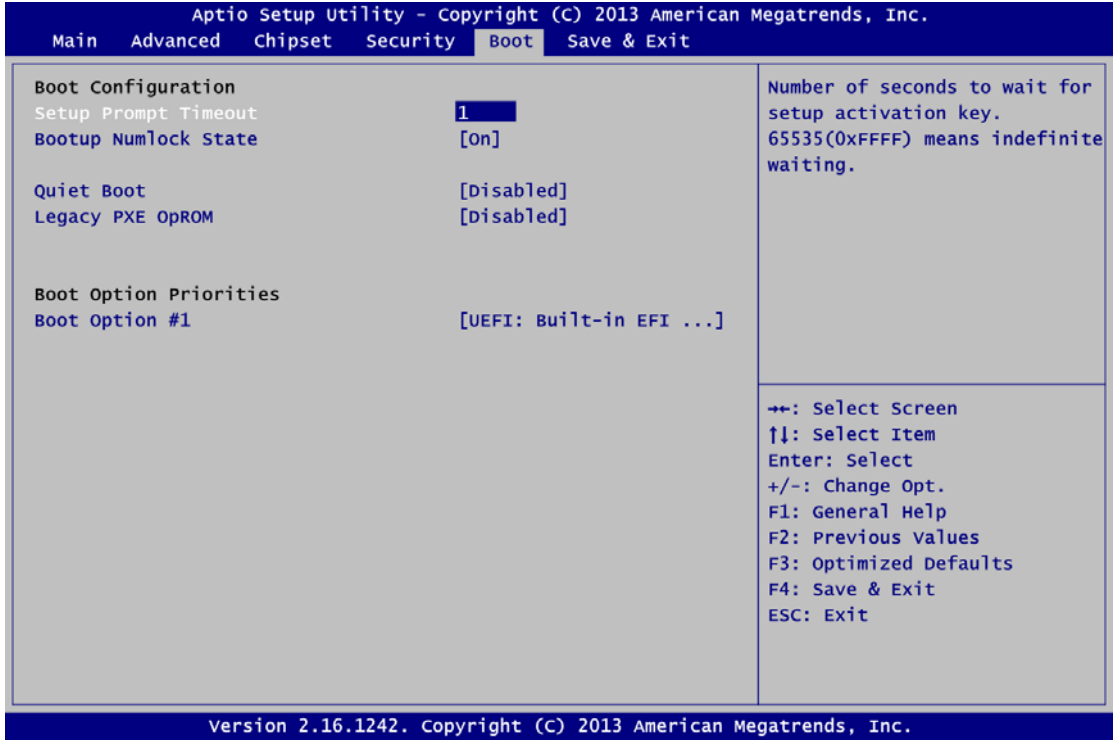
Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Use this item to select the power-on state for the keyboard NumLock.

Quiet Boot

Select to display either POST output messages or a splash screen during boot-up.
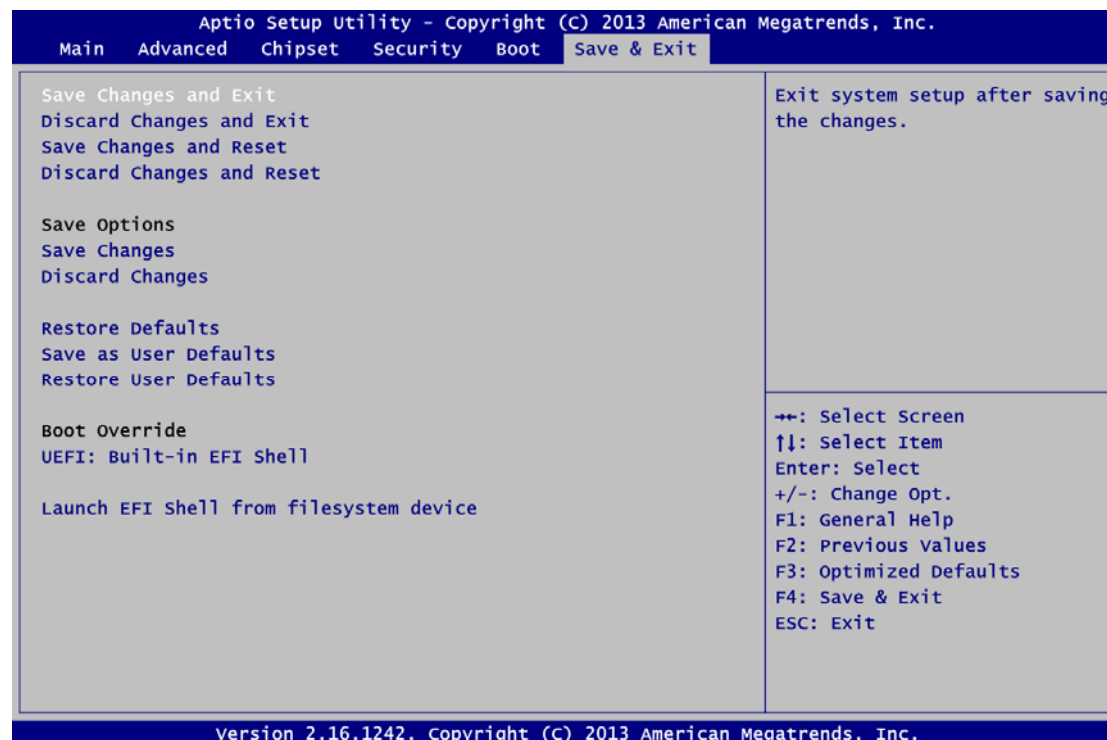
Launch PXE OpROM

Use this item to enable or disable the boot ROM function of the onboard LAN chip when the system boots up.

Boot Option Priorities

These are settings for boot priority. Specify the boot device priority sequence from the available devices.

4.8   Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or fail-safe default values.

```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
   Main   Advanced   Chipset   Security   Boot   Save & Exit

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

  Save Options
  Save Changes
  Discard Changes

  Restore Defaults
  Save as User Defaults
  Restore User Defaults                              ↔: Select Screen
                                                     ↑↓: Select Item
  Boot Override                                      Enter: Select
  UEFI: Built-in EFI Shell                           +/-: Change Opt.
                                                     F1: General Help
  Launch EFI Shell from filesystem device            F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit

          Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

Save Changes and Reset

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

Discard Changes and Reset

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

Save Changes

When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

Discard Changes

Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

Restore Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

Save as User Defaults

Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

Restore User Defaults

It automatically sets all Setup options to a complete set of User Defaults when you select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

Boot Override

Select a drive to immediately boot that device regardless of the current boot order.

Launch EFI Shell from filesystem device

Attempt to launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

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APPENDIX A
WATCHDOG TIMER

About Watchdog Timer

After the system stops working for a while, it can be auto-reset by the watchdog timer. The integrated watchdog timer can be set up in the system reset mode by program.

How to Use Watchdog Timer

The following example enables configuration using debug tool.

Enable WDT

↓

Enable configuration:

                    O 2E 87 ; Un-lock super I/O

                    O 2E 87

↓

Select logic device:

                    O 2E 07

                    O 2F 08

↓

WDT device enable:

                    O 2E 30

                    O 2F 01

↓

Set timer unit:

                    O 2E F0

                    O 2F 00 ; (00: Sec; 08:Minute)

↓

Set base timer:

                    O 2E F1

                    O 2F 0A ; Set reset time (where 0A (hex) = 10sec)

Disable WDT

↓

Enable configuration:

                                      O 2E 87 ; Un-lock super I/O

                                      O 2E 87

↓

Select logic device:

                                      O 2E 07

                                      O 2F 08

↓

WDT device disable:

                                      O 2E 30

                                      O 2F 00

APPENDIX B
DIGITAL I/O

About Digital I/O

The onboard digital I/O has 8 bits (DIO0~7). Each bit can be set to function as input or output by software programming. In default, all pins are pulled high with +5V level (according to main power). The BIOS default settings are 3 inputs and 5 outputs where all of these pins are set to 1.

Pin No.	Pin define
1	DO 0
2	DO 1
3	DO 2
4	DO 3
5	DO 4
6	DI 0
7	DI 1
8	DI 2
9	GND

🖉 *Note*	***Except for pin9(GND), while power on, the rest pin is are set to +5V level.***

Digital I/O Programming

The following example enables configuration using debug tool.

Start digital I/O programming

↓

Enable configuration:

                          O 2E 87 ; Un-lock super I/O

                          O 2E 87

↓

Select logic device:

                          O 2E 07

                          O 2F 07

↓

Set multi-function selection:

                          O 2E 1C

                          O 2F 1C ; Open GPIO2 and close UART

↓

Set GPIO2 I/O register:

                          O 2E E8

                          O 2F 00 ; 00: Programmed to function as output port

                                ; FF: Programmed to function as input port

↓

Set GPIO2 data register:

; Set digital output pins value

                          O 2E E9

                          O 2F 00 ; 00: Set digital output to low level

                                ; FF: Set digital output to high level

↓

Digital Input:

; Read digital input data

                          O 2E E9

                          i 2F   ; FF: Digital input data is high (default state)