AR-V5403FLAT-LTEAT-LTE
Installation Guide

Revision	Description	Date
1.0	Release	2010/08/07
1.1	Add 4G LTE describe	2012/10/9
1.2	Modify AR-V5403FL to AR-V5403FLAT-LTE	2012/10/16
1.3	Contents modify by FCC(TCB) submission required.	2012/10/18

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1 Introduction to AR-V5403FLAT-LTE

AR-V5403FLAT-LTEAT-LTE is a Fan-less system product mainly for vehicles industry PC applications. With powerful Intel CPU core & diverse memory card extension (according to CF card, SO-DIM), AR-V5403FLAT-LTE can satisfy the users requirements in any vehicles industry applications environment, especially in vehicles computer fields. AR-V5403FLAT-LTE has diverse physical interface in the front panel, such as GPIO's terminal, 2*(10/100/1000Base-T) LANs, VGA connectors, build-in LEDs, 4 USB Ports, 2 COM ports, SIM card functions and FUSE, ATX Power Switch &Remote Switch/ Microphone/Speaker, DC inlet. In addition, the system provides the capacity for extending I/O device by options adding GPS/4G LTE/WiFi Bluetooth depends on users needs.

1.1 Specifications

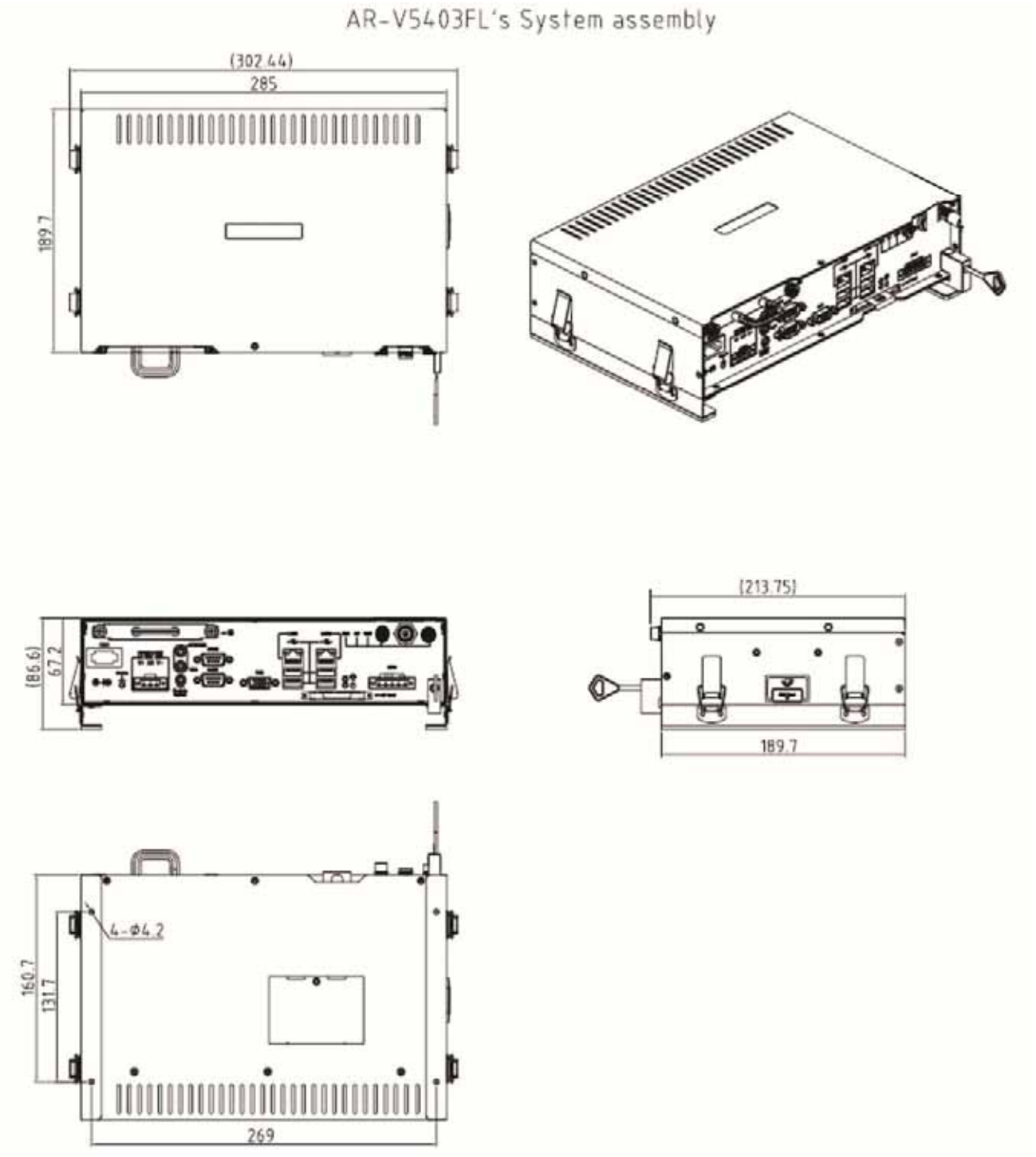
Item	Description
System	AR-V5403FLAT-LTE
CPU Board	AR-B5403 series
System Dimensions (uncluding bracket)	285x190x67(mm)

1.2 Packing List

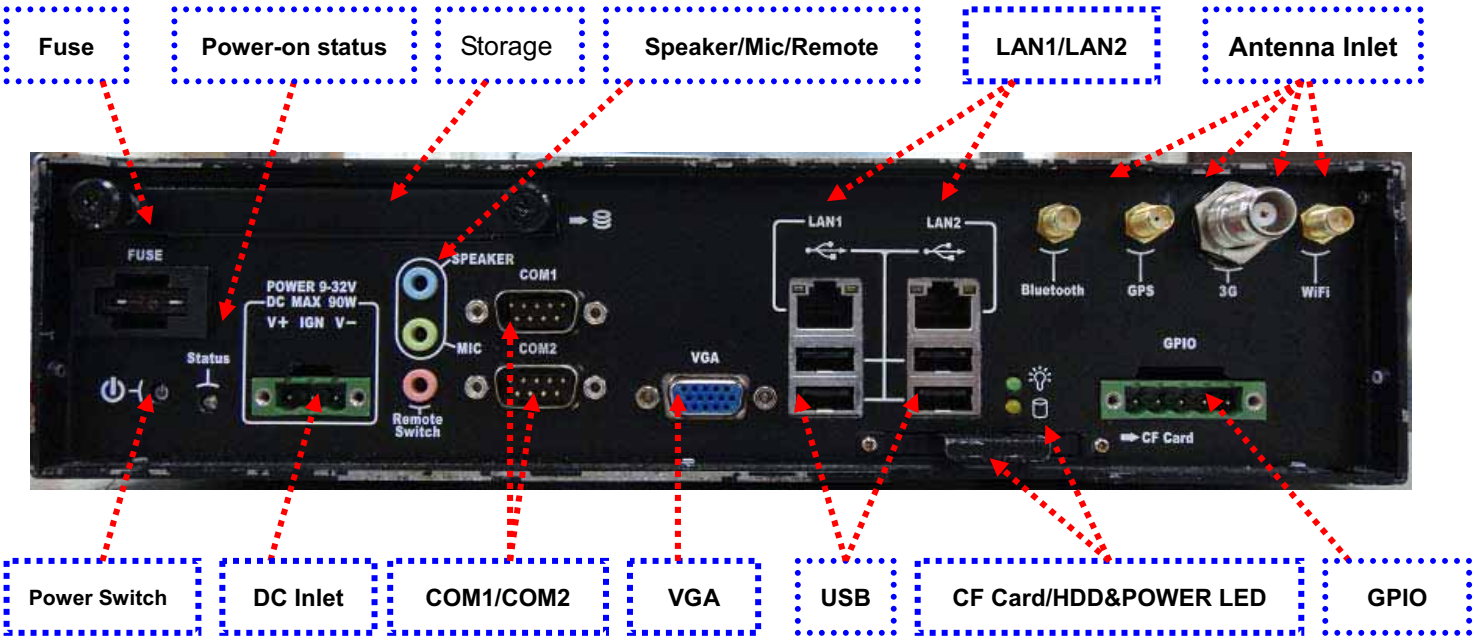
Description	Quantity
AR-V5403FLAT-LTE	1
Terminal block (Plug-DC connecter)	1
Terminal block (Plug-GPIO connecter)	1
Wall Mount Bracket(Including label for isolation)	2
Compact Disk	1
KB/MS Y Cable	1
Remote Switch Cable	1
2.5"HDD Bracket (Screws-4PCS)	1
Antenna for GPS external cable (Option)	1
Antenna for 4G LTE external cable (Option)	1
Antenna for Wi-Fi + Bluetooth external cable (Option)	1
Fuse 7.5A for 24V vehicles	1

System Dissection

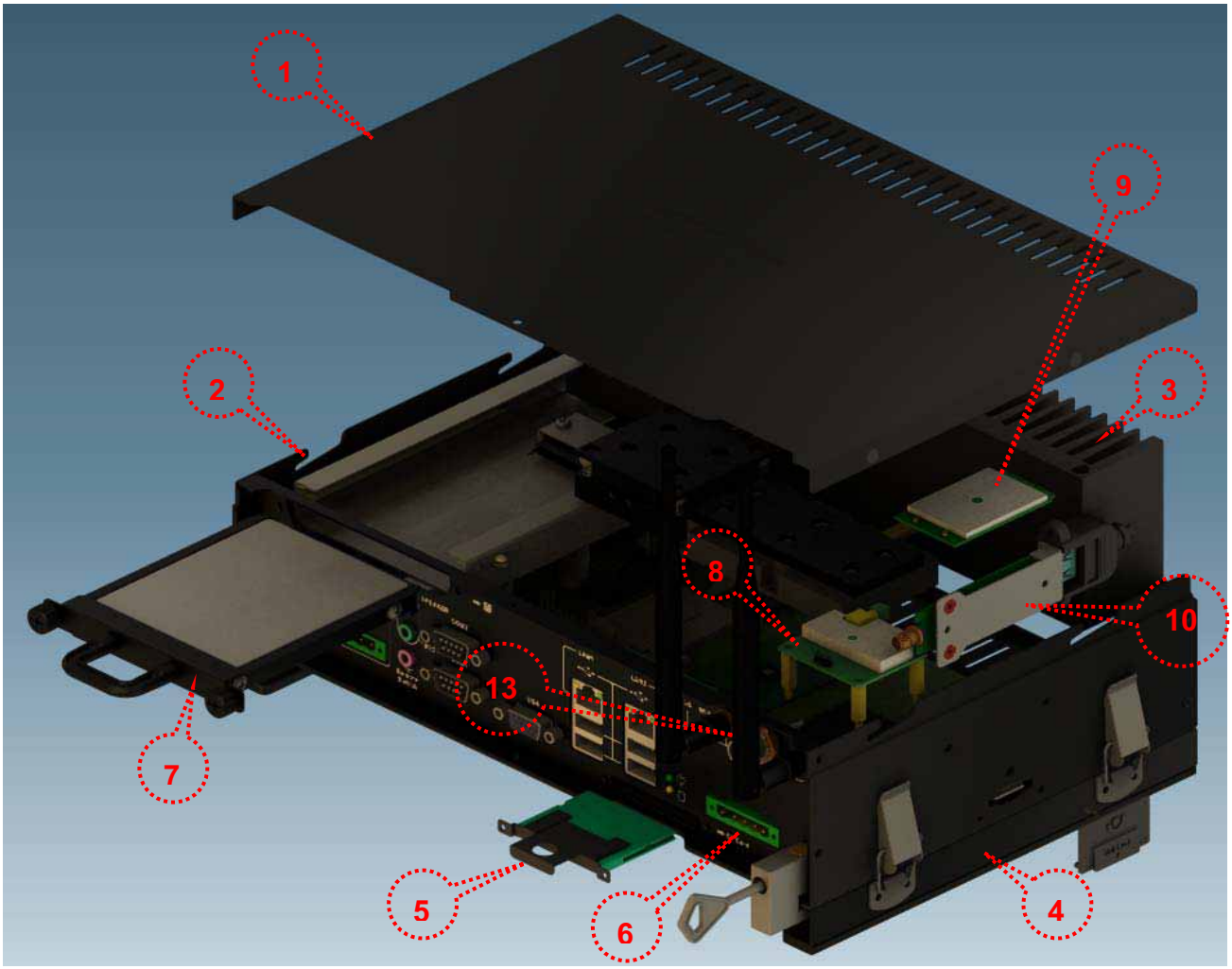
(1)Dimensions

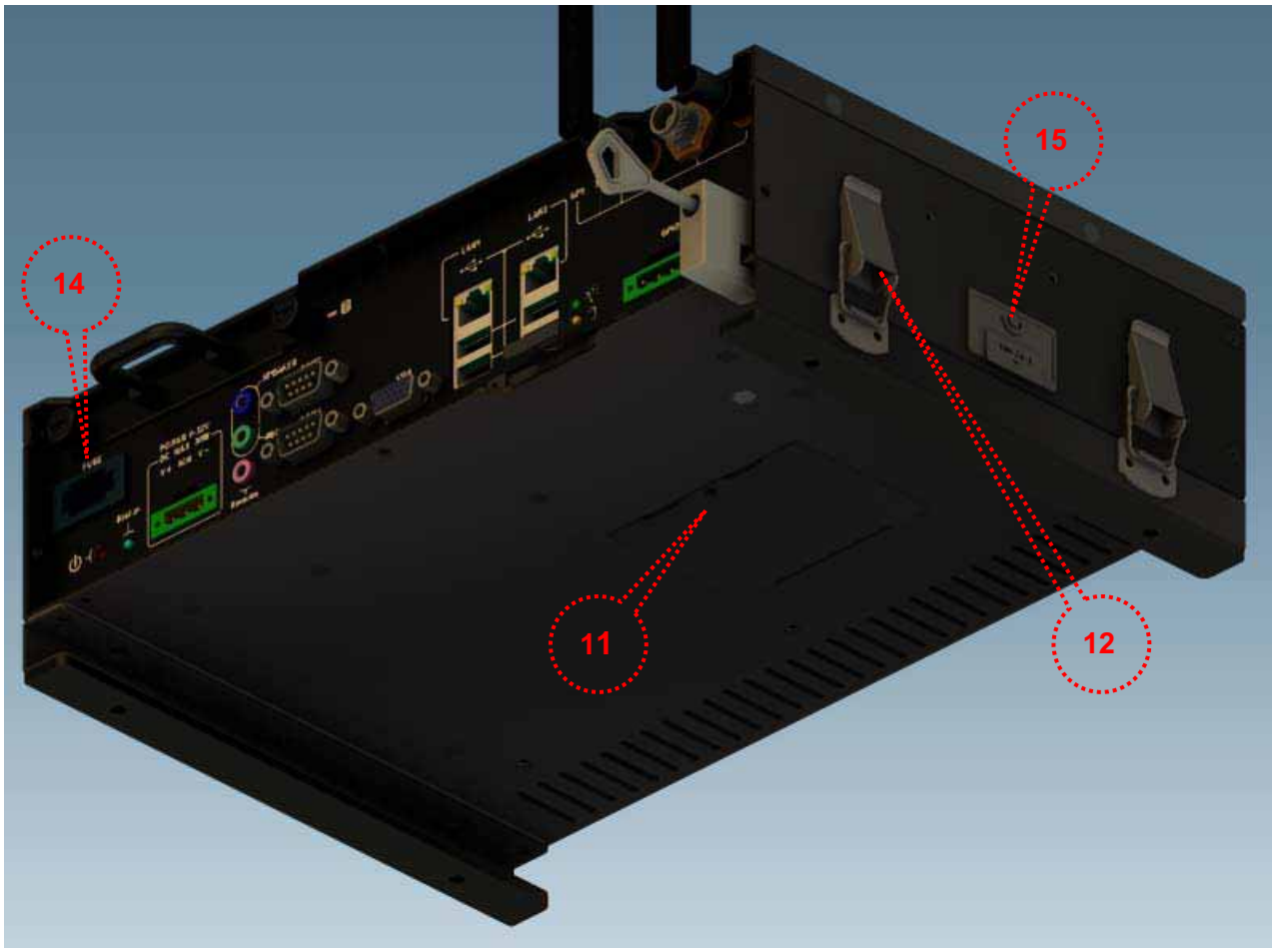


(2)Front Panel “I/O”



(3)System Configuration




14
15
11
12

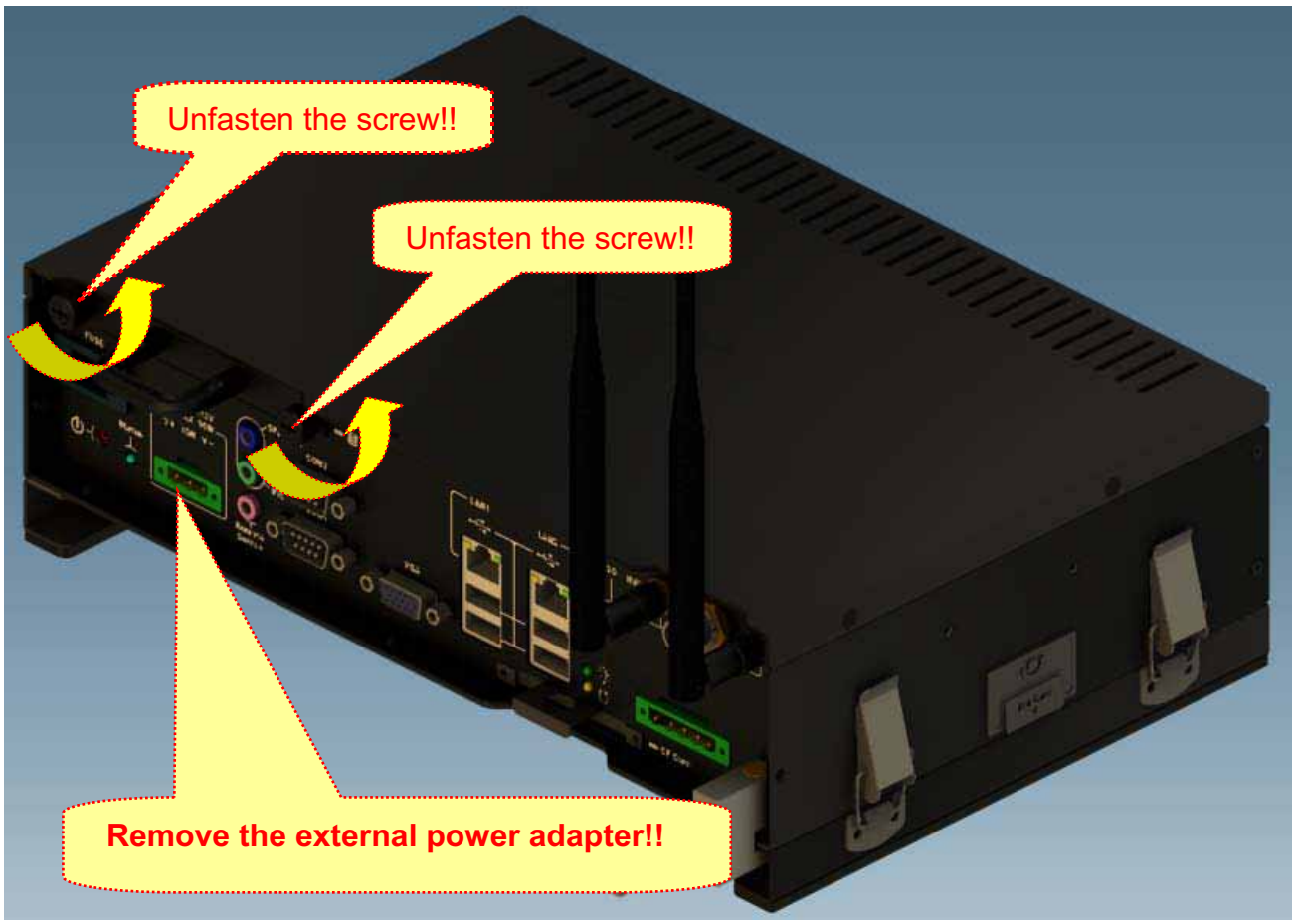
Item	Description	Quantity
1	Upper Cover	1
2	Bottom Case	1
3	Thermal Module	1
4	Mounting Bracket	2
5	CF Card Bracket	1
6	Mother board + GPIO board	1
7	HDD/SSD Module	1
8	GPS Module	1
9	4G LTE Module	1
10	Wi-Fi Module	1
11	DDRII Lid	1
12	Hook modules of bracket	4
13	Antennas of GPS/4G LTE/WiFi	1
14	Fuse 7A for 12V vehicles (default value)	1
15	SIM Card cover	1

2 Procedure of Assembly/Disassembly

2.1 2.5” Hard Disk Installation

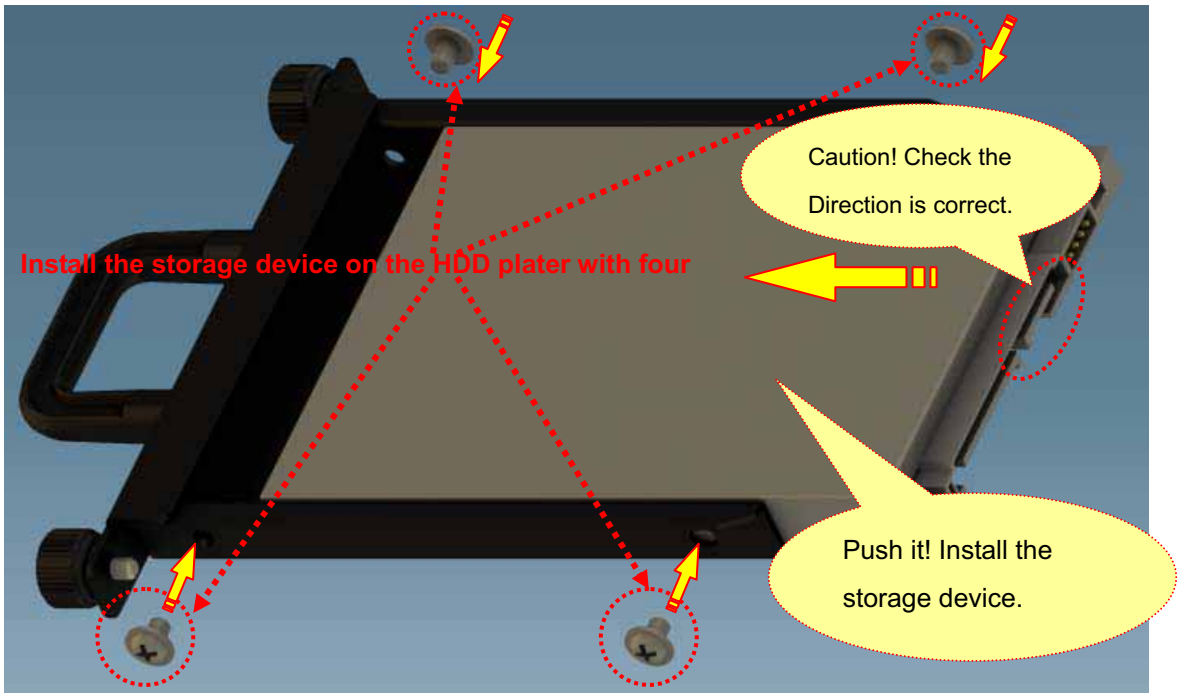
The following instructions will guide you to install HDD step-by-step:

1. Remove the terminal plug from the AR-V5403FLAT-LTE.
2. Unfasten the screws from storage plate of AR-V5403FLAT-LTE.



3. Pulled the storage plate by below photo direction.

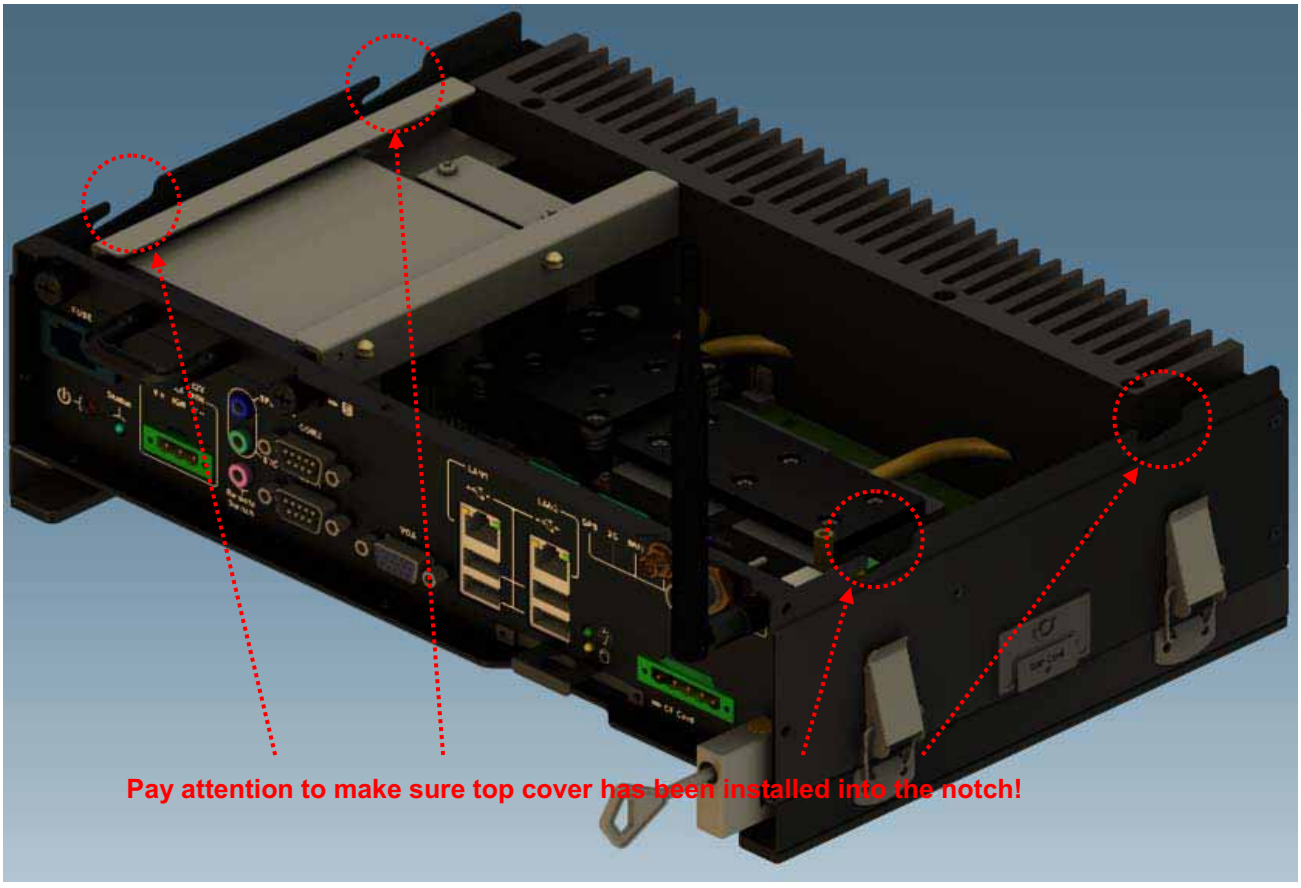
4. Inserted the storage device into the HDD plater.



5. Place HDD module back into the case.

6. Fix HDD module to the chassis by two screws.

7. Slide the top cover into or take off the bottom chassis.



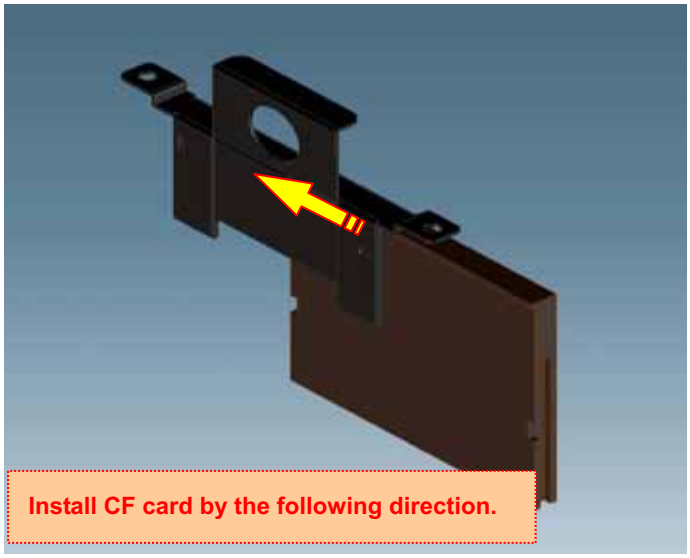
8. Finish the modules (4G LTE/GPS/Wifi-Bluetooth) installation after fastening the screw.

2.2 Accessory (CF card, 4G LTE, GPS, Wi-Fi Bluetooth, SIM Card, Outline bracket) Installation

- **Install CF Card**

1. Remove the extending CF's bracket by unfastening the screws.

2. Install CF card into bracket.



3. Install CF card module back to CF socket.

- **Install SIM Card**

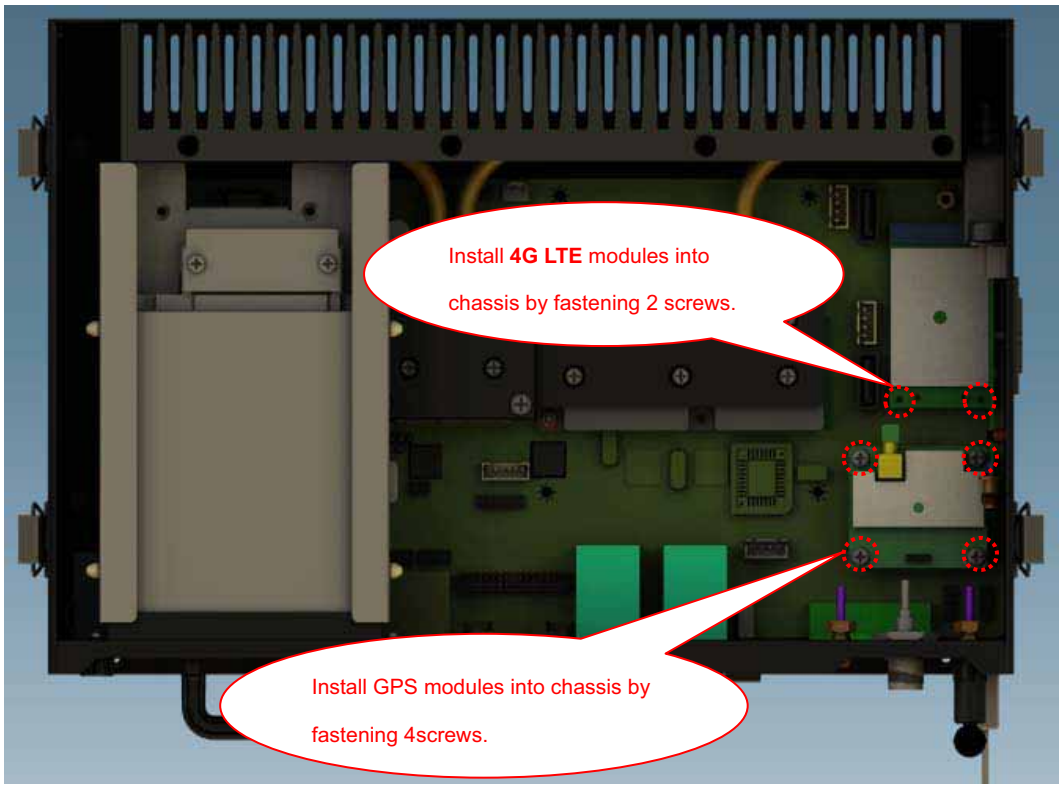
- **Install Outline Bracket**

1. Install fasteners with case by 4 screws.
2. Install fasteners' another side with Outline bracket by 4 screws.
3. Lock the fasteners.

2.3 GPS/4G LTE/WiFi-Bluetooth Modules Installation

1. Unfasten 2 screws to release Wi-Fi Bluetooth bracket.

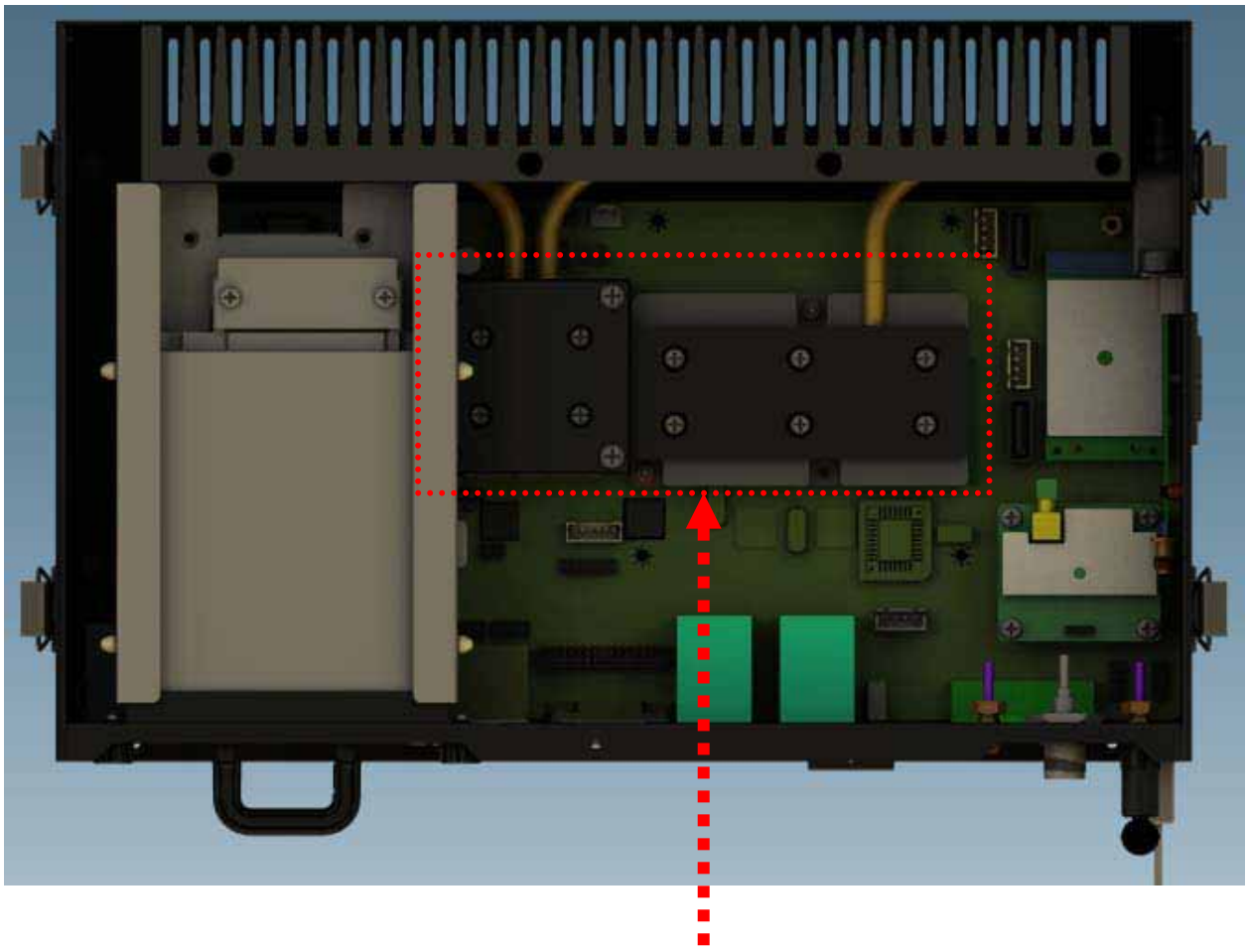
2. Install GPS/4G LTE modules into chassis by fastening screws.



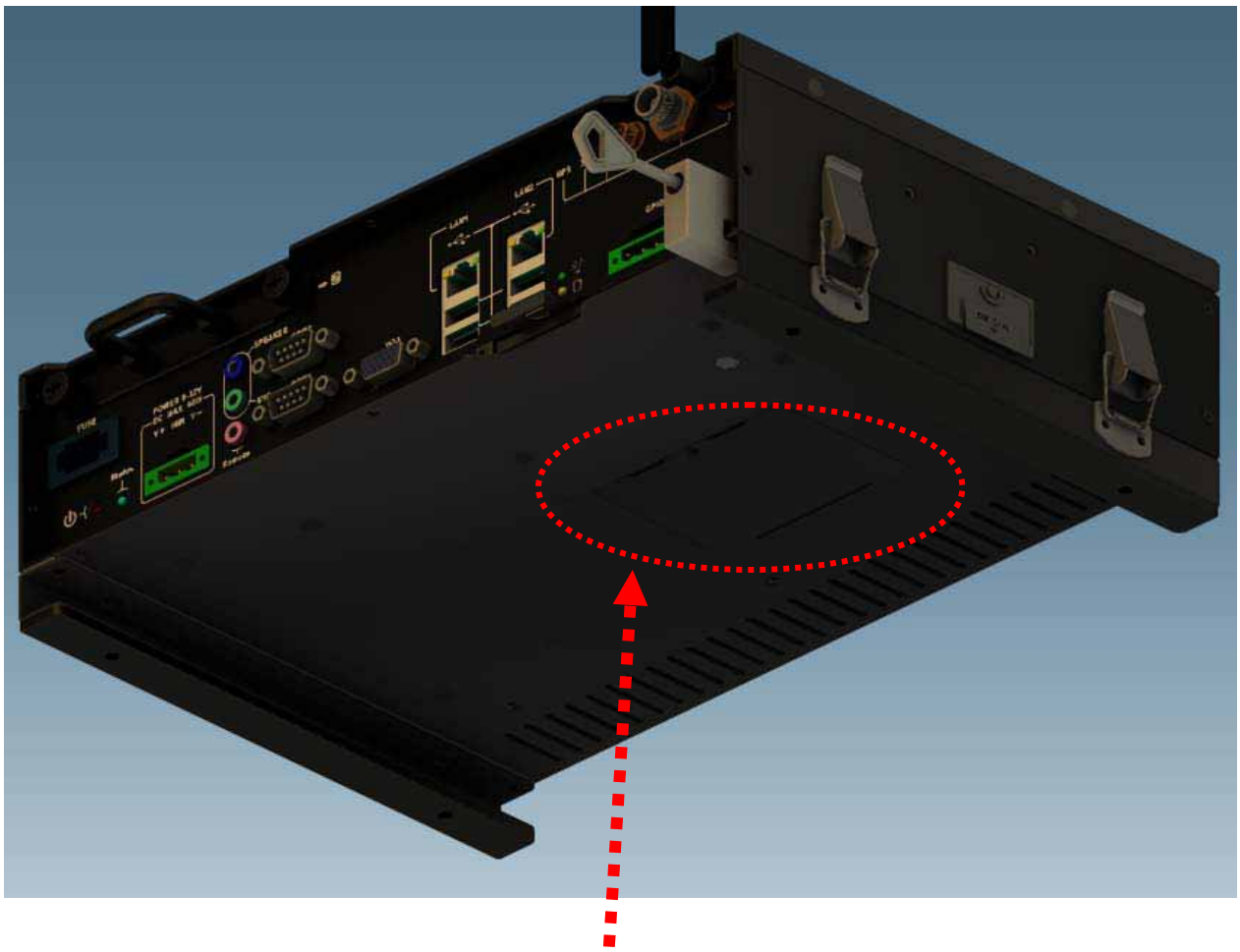
3 Appendix

Please do not change CPU by yourself. Any disassembly and assembly behavior for the CPU thermal module will causes unexpected damages.

Contact with Acrosser customer service center/FAE to change CPU.



Please NOT disassemble and assemble the thermal module by yourself



Please NOT disassemble and assemble the SO-DIMM module by yourself

4 Introductions of AR-B5403

Welcome to the AR-B5403 Computer. The AR-B5403 is an Intel Core 2 Duo EPIC single board computer provides variety of display outputs. In addition to VGA, DVI and LVDS display outputs, AR-B5403 supports S-Video, BNC, and component TV outputs.

4.1 Features

- Processor: Core 2 Duo
- Chipsets: 945GM + ICH7M
- Memory: DDR2 533/667MHz SO-DIMM, Maximum 2GB
- Display: VGA, DVI, LVDS, TV Out
- Storage: 1x CF, 2x SATA II,
- Audio: Line-out, Mic-in
- Communication: 2x Gbps Ethernet, 7x USB 2.0, 3x RS-232, 1x RS-232/422/485
- General: Watchdog timer, 8-bit GPIO, and PCI-104 expansion slot.

Specifications

System	
CPU	Support Intel Core 2 Duo CPU: T5500
Chipset	Intel 945GME+ICH7M
FSB	533/667MHz
Memory	One SO-DIMM socket support 667/533 MHz DDR2 SDRAM up to 2GB 2G Bytes 667MHz DDRII pre-installed
Video	
Graphic Controller	Intel 945GME integrated GMA 950 graphic controller
Video Memory	DVMT 3.0, Maximum 256MB shared
Video Interface	1 x VGA port (DB15) must support 1024 x 768 resolution
Storage	
IDE	1 x IDE for CF
SATA	2 x SATA II port, preinstall 16GB

<table>
<tr><td>CF</td><td>1 x External Compact Flash socket</td></tr>
<tr><td>Disk Bay</td><td>1 x Anti-shock 2.5" HDD bracket swappable without open case</td></tr>
<tr><td colspan="2">I/O</td></tr>
<tr><td>Ethernet</td><td>2 x Gbps RJ45 with LED, Broadcom BCM5787
LAN LED Signal definition:
<table>
<tr><td>LED Position</td><td>LED Function</td><td>LED Color</td><td>On</td><td>Off</td><td>Blinking</td></tr>
<tr><td>Left</td><td>Speed</td><td>Orange
Green</td><td>1G bps
100 Mbps</td><td>10 Mbps
or No Link</td><td>Not Applicable</td></tr>
<tr><td>Right</td><td>Link / Activity</td><td>Yellow</td><td>Link</td><td>No Link</td><td>Link with Activity</td></tr>
</table></td></tr>
<tr><td>Serial Port</td><td>3 x RS-232, 1x RS-232/422/485 (COM 2)
(2 x DB9, 1 x pin header for COM4 for GPS, 1 x internal COM3 for reserve for PIC on power circuit)</td></tr>
<tr><td>USB</td><td>8 X USB 2.0
(4 x external port, 3 x pin header , 1 x for Mini PCIe 4G LTE)</td></tr>
<tr><td>GPIO</td><td>4-bit GPIO (2 In, 2 Out) with 5 pin terminal block, 2-in/GND/2-out</td></tr>
<tr><td>Audio</td><td>IC: Realtek ALC655
Interface : MIC-In, SPK-Out</td></tr>
<tr><td>Remote control</td><td>1 x Remote control</td></tr>
<tr><td>Fuse</td><td>7.5A</td></tr>
<tr><td>Antenna Hole</td><td>1 x SMA Female for GPS
1 x TNC for 4G LTE
1 x SMA Female / RP for WiFi
1 x SMA Female / RP for BT</td></tr>
<tr><td>miniPCIe</td><td>1 x miniPCIe for MC7700 (AT&T version)</td></tr>
<tr><td>SIM</td><td>SIM slot x1, SIM card changeable without opening case, latch to protect SIM uncertainly touch</td></tr>
<tr><td colspan="2">Expansion</td></tr>
<tr><td colspan="2">Others</td></tr>
<tr><td>GPS</td><td>Globalsat ER-332</td></tr>
<tr><td>4G LTE</td><td>Sierra MC7700 (AT&T version), through miniPCIe slot on AR-B5403AT</td></tr>
<tr><td>WiFi</td><td>SparkLAN WUBR-170GN(M) support AP mode and Client mode</td></tr>
<tr><td>Bluetooth</td><td>Qcom Bluetooth module</td></tr>
<tr><td colspan="2">Software</td></tr>
<tr><td>OS support</td><td>Fedora 13 (32bit)</td></tr>
<tr><td>Start up Logo</td><td>No need for having AT&T logo when start up</td></tr>
<tr><td>Power</td><td>Power onboard design(AR-B5403AT)</td></tr>
</table>

- Wide range input DC 9V~32V for Mode 0 & 1. For other mode, “low battery voltage protection” will monitor the system. If battery voltage low, power controller will forbid turn-on the system.
- Add TVS for over voltage protection
- Power board has internal PIC timer (not clock). It is designed for power board use only. The timer has 2% deviation (14.4min per 12 hour).
- Fuse Design
- Smart ATX power function:

a. Power on/off retry
b. Adjustable delay time for system OFF by Switch on power module (Mode2~Mode7)
c. System on/off by Vehicle ignition or Remote switch button
d. Low Power input monitoring, Auto shutdown

- S/W configurable by COM3
- Remote switch(audio jack)
- System status LED(blue)

Mode 0 and 1:
LED will be constant ON when power output is ON. LED will be constant OFF when power output is off.
Mode 2 to 7(Smart ATX mode):
The LED will flash a number of blink to state the status. Each blink remains 500 milliseconds ON followed by a 500 ms OFF. Each Cycle will have a 5-second OFF in between.

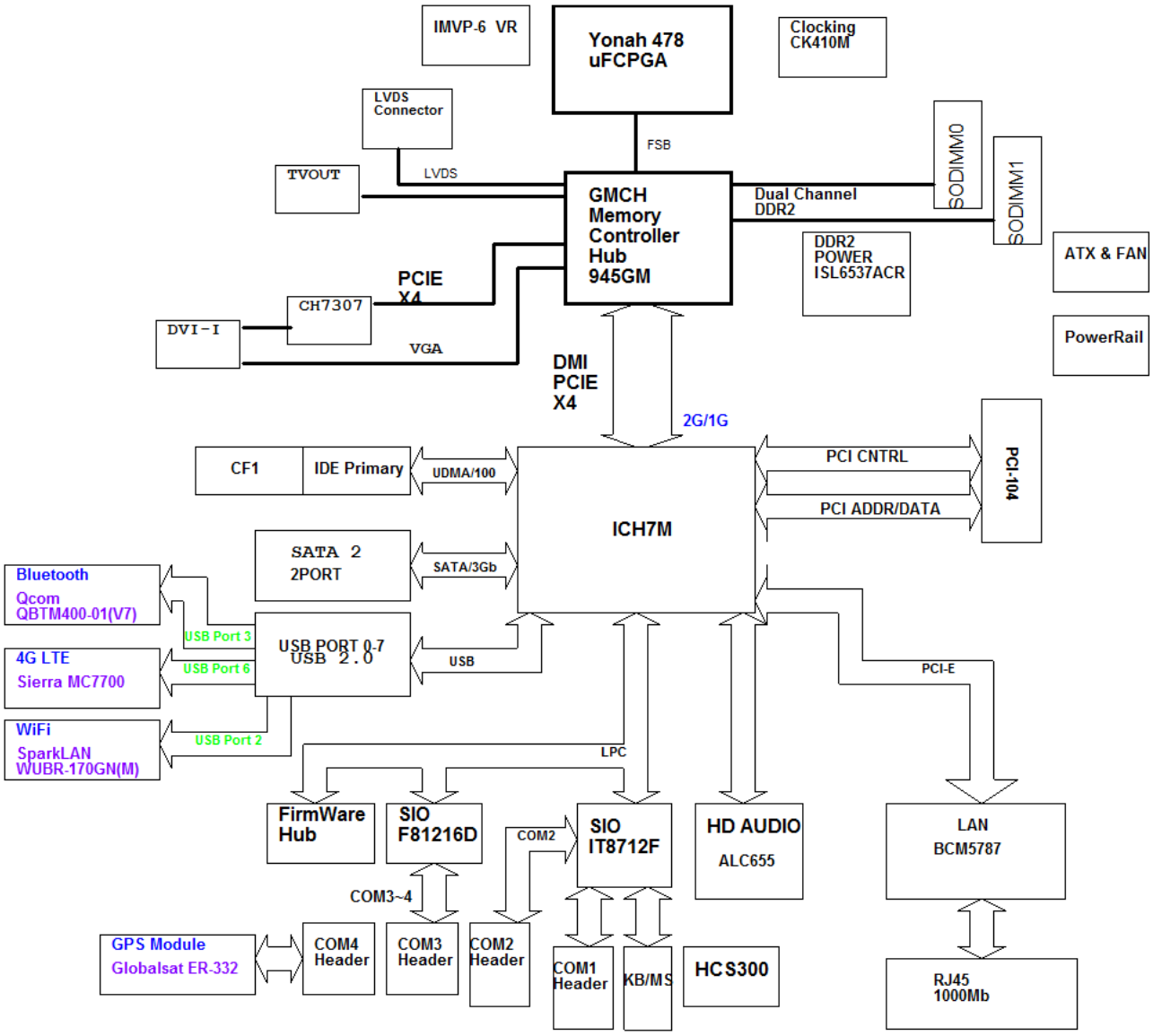
LED flashing number	Status
0 (constant ON)	System is operating (Power Output runs normally)
1	System off
2	Hard off delay (After power output is turned off until 5VSB is turned off)
3	Soft off delay and Shut down delay. (After ignition is turned off or remote switch is pressed until power output is turned off.)
4	Battery voltage low
5	System on/off fail. When motherboard cannot turn on or turn off after retry.
6-128	Reserved

- Embedded power local switch

Power mode default is Mode 15

Mechanical & Environment	
Thermal Design	Heat pipe solution
Chassis Material	Metal steel
Bracket	Bracket with anti-thief function (Locker option)
Dimension	(L) 285 x (W) 189.7 x (H) 67.2 (mm)
Vibration	IEC 60068-2-64 5~500Hz, 3GRMS for SSD/CF, 1GRMS for 2.5”HDD, operating
Shock	IEC 60068-2-27 50G-500m/s -11ms, operating
Operating Temp.	-15~50℃ with Industrial Grade CF or SSD
Storage Temp.	-40~80℃
Certification	CE/FCC, PTCRB

4.3 Block Diagram

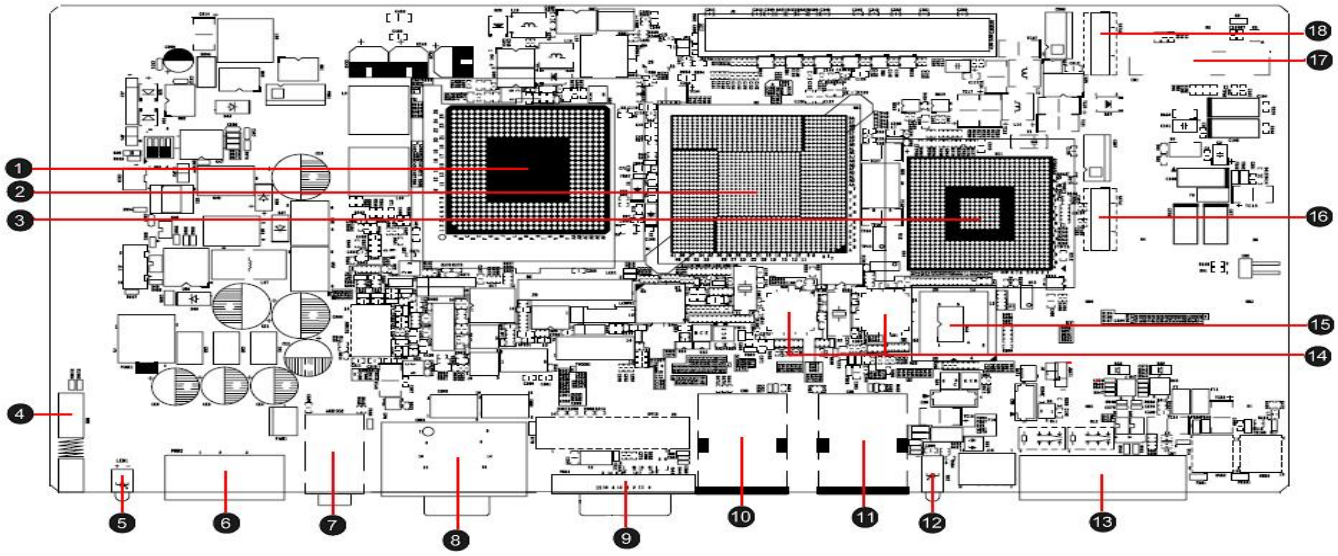


5 Hardware's Information

This chapter describes the installation of AR-B5403. At first, it shows the Function diagram and the layout of AR-B5403. It then describes the unpacking information which you should read carefully, as well as the jumper/switch settings for the AR-B5403 configuration.

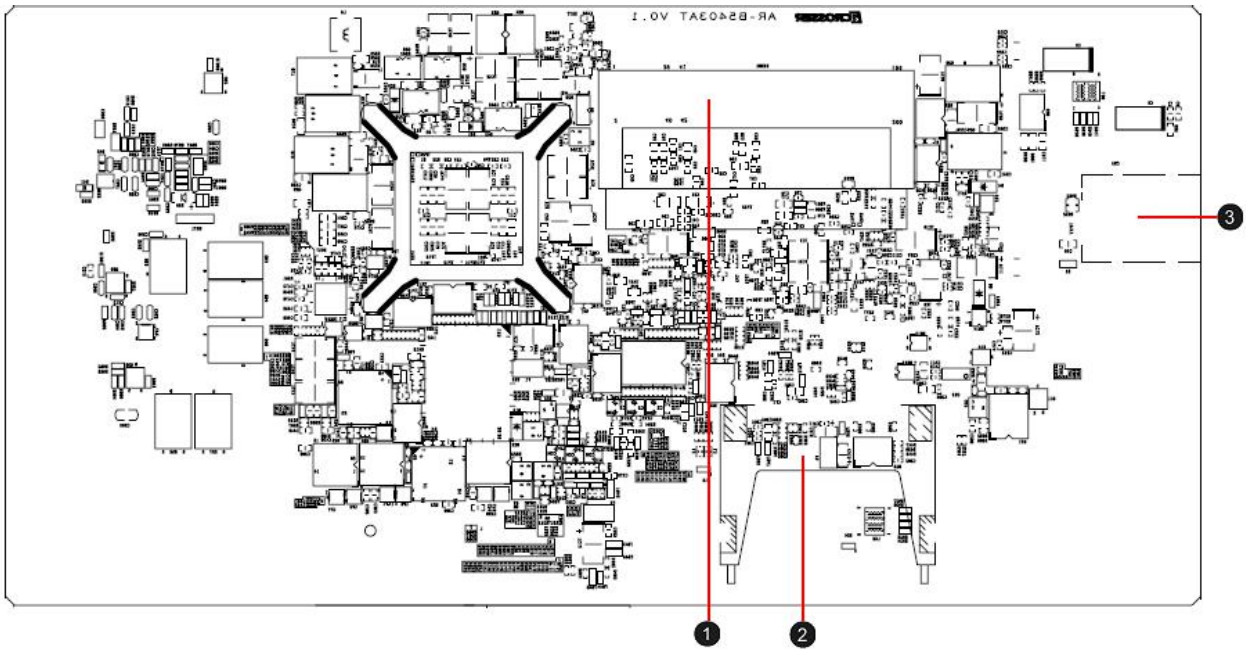
5.1 Locations

5.1.1 Top Side



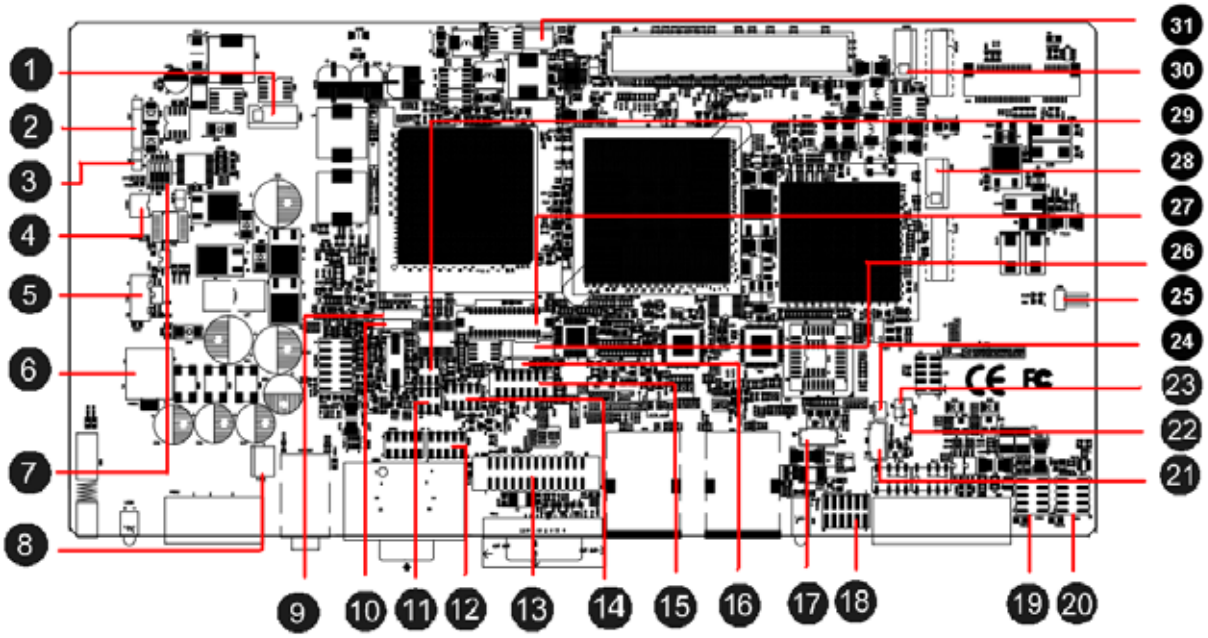
1	**CPU** CPU Socket	10	**USB Port and LAN** 2 USB and 1 RJ-45 for LAN
2	**GMCH** Graphic Memory Control Hub Intel 945GME	11	**USB Port and LAN** 2 USB and 1 RJ-45 for LAN
3	**ICH7M** Graphic Memory Control Hub Intel GM45	12	**Power LED and HDD LED** Power LED and HDD LED
4	**Local Switch** 12V Power Switch	13	**GPIO Port** User Defined GPIO Port
5	**Status LED** Machine Status LED	14	**LAN Chip** Broadcom BCM5787 Gigabit Ethernet
6	**Power Connector** 12V Power Connector	15	**BIOS** BIOS IC
7	**Remote Switch and Audio** Remote Power Control and Audio I/O	16	**SATA1** SATA Data Connector
8	**COM Port** RS232 Serial Ports (COM1 & COM2)	17	**Mini-PCIE for 4G LTE module** 4G LTE Module slot with USB interface
9	**VGA** VGA Port	18	**SATA2** SATA Data Connector

5.1.2 Bottom Side



1	**SO-DIMM Socket** SO-DIMM Socket for DDR2	3	**SIMM Card Socket** SIMM Card Socket for 3G Module
2	**CF Slot** CF Slot for CF Card support IDE Mode		

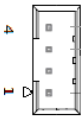
5.1.3 Connector and Jumper Setting



1	PWR1 12V, 5V Output	12	COM4 Pin Header for COM4 Port	23	J6 CF Card Master setting
2	J12 Connector for Programming PIC	13	DVI3 DVI Output Port	24	BAT1 Battery Input
3	JP4 Define KEY_SW, ENG_STS input type	14	GPIO1 Pin Header for User-Defined GPIOs	25	CN2 4G LTE Carrier Board Status LED
4	CN10 Reserve Pin	15	TVCON1 TV Output Port	26	LCDPW1 Backlight Power and Control signal
5	J11 Front Panel Connector	16	J1 LVDS Panel Power Select	27	LCD1 LCD Signal Output
6	Fuse1 Fuse Connector	17	CN8 +5V, +12V for External Module	28	CON7 SATA Device Power
7	SW1 DIP Switch for Power Mode Select	18	J10 Jumper Select for GPIO Configuration	29	JP1 COM2 Transfer Protocal setting
8	FAN1 System Fan Connector	19	USB2 Pin Header for USB Ports	30	CON2 SATA Device Power
9	IR1 IR Port	20	USB3 Pin Header for USB Ports	31	FAN2 CPU FAN Connector
10	J5 COM2 RS-422,RS-485 Output	21	CN9 +5V, +12V for External Module		
11	J9 Power SW, Reset, Buzzer Connector	22	JBAT1 Pin Header for CMOS Clear		

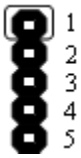
5.2 Connector and Jumper Setting Table

1. PWR1 (12V,5V Output)



PIN	DEFINE
1	+12V
2	GND
3	GND
4	+5V

2. J12 (Connector for PIC Programming)



PIN	DEFINE
1	+5VSB
2	ISPDATA
3	ISPCLK
4	ISPVPP
5	GND

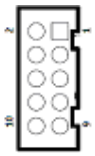
3. JP4 (Define Key_SW, ENG_STS Input Type)

	Status
Open	Active High
Short	Active Low

4. CN10 (GPO reserve)

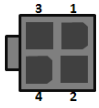
PIN	SIGNAL
1	GPO
2	GND

5. J11(Front Panel Connector) (Note1)



PIN	Signal	PIN	Signal
1	PWRBTN_IN	2	GND
3	LOC_SW	4	GND
5	KEY_SW	6	GND
7	ENG_STS	8	GND
9	STS_LED	10	GND

6. FUSE1 (Connect to Fuse)



PIN	Signal
1,2	Fuse Out
3,4	Fuse In

7. SW1 (DIP switch for power mode select)(Note2)

Mode	1	2	3	4
0	ON	ON	ON	ON
1	ON	ON	ON	OFF
2	ON	ON	OFF	ON
3	ON	ON	OFF	OFF
4	ON	OFF	ON	ON
5	ON	OFF	ON	OFF
6	ON	OFF	OFF	ON
7	ON	OFF	OFF	OFF

8. FAN1 (System FAN)

PIN	SIGNAL
1	GND
2	12V
3	FAN Speed Detect

9. IR1 (IR Pin Header)

PIN	DEFINE
1	+5V
2	NC
3	IR_RX
4	GND
5	IR_TX

10. J5 (COM2 RS-422,RS-485 Output)

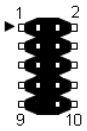
PIN	SIGNAL
1	TX+
2	TX-
3	RX+
4	RX-

11. J9 (Power Button & Reset & Buzzer)

PIN	SIGNAL	PIN	SIGNAL
1	5V	2	PCBEEP
3	GND	4	RESET
5	GND	6	PWRBTN

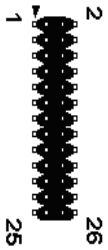
※PWRBTN for ATX mode only

12. COM4 (Pin Header for COM4)



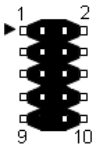
PIN	SIGNAL	PIN	SIGNAL
1	DCD	**2**	DSR
3	RX	**4**	RTS
5	TX	**6**	CTS
7	DTR	**8**	RI
9	GND	**10**	NC

13. DVI3 (DVI Port)



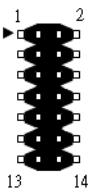
PIN	SIGNAL	PIN	SIGNAL
1	GND	**2**	TD0
3	TD0-	**4**	GND
5	TD1	**6**	TD1-
7	GND	**8**	TD2
9	TD2-	**10**	GND
11	TCK	**12**	TCK-
13	HPD	**14**	DDCCLK
15	VCC	**16**	DDCDATA
17	RED	**18**	GND
19	GREEN	**20**	GND
21	BLUE	**22**	GND
23	VSYNC	**24**	CRT
25	HSYNC	**26**	CRT

14. GPIO1(Pin Header for User-Defined GPIOs)



PIN	SIGNAL	PIN	SIGNAL
1	GPIO0	**2**	5V
3	GPIO1	**4**	GPIO7
5	GPIO2	**6**	GPIO6
7	GPIO3	**8**	GPIO5
9	GND	**10**	GPIO4

15. TVCON1 (TV Output Port)

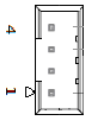


PIN	Signal	PIN	Signal
1	S-Video Luminance	**2**	Reserve
3	GND	**4**	Reserve
5	CVBS	**6**	NC
7	GND	**8**	Reserve
9	S-Video Chrominance	**10**	GND
11	GND	**12**	NC
13	NC	**14**	NC

16 J1 (LCD Panel Power Select)

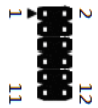
STATUS	SETTING
1-2 close	+5V
2-3 close	+3.3V

17 CN8 (Power Connect for +12V and +5V)



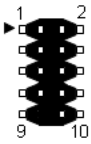
PIN	DEFINE
1	+12V
2	GND
3	GND
4	+5V

18 J10 (Jumper Select for GPIO configuration)



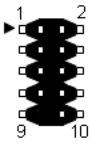
PIN	DEFINE
1-2	NC(DEFAULT)
3-4	NO
5-6	GND(DEFAULT)
7-8	+5V
9-10	+12V
11-12	+EXT

19. USB2 (USB Output Port)



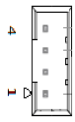
PIN	SIGNAL	PIN	SIGNAL
1	+5V	2	+5V
3	DATA3-	4	DATA2-
5	DATA3+	6	DATA2+
7	GND	8	GND
9	GND	10	GND

20. USB3 (USB Output Port)



PIN	SIGNAL	PIN	SIGNAL
1	+5V	2	NC
3	DATA7-	4	NC
5	DATA7+	6	NC
7	GND	8	NC
9	GND	10	NC

21. CN9 (Power Connect for +12V and +5V)



PIN	DEFINE
1	+12V
2	GND
3	GND
4	+5V

22. JBAT1 (Pin Header for CMOS Clear)

STATUS	SETTING
1-2	Normal
2-3	Clear CMOS

23. J6 (CF Card status)

STATUS	SETTING
SHORT	Master
OPEN	Slave

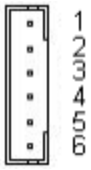
24. BAT1 (Battery Connector)

PIN	SIGNAL
1	VBAT
2	GND

25. CN2 (4G LTE Module Status)

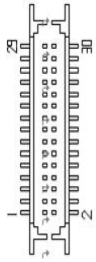
PIN	SIGNAL
1	+3.3V
2	Status Signal

26. LCDPW1 (Backlight Output)



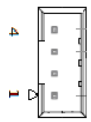
PIN	DEFINE
1	+12V
2	+12V
3	GND
4	Backlight Enable
5	GND
6	Backlight Control

27. LCD1 (LCD Signal Output)



PIN	SIGNAL	PIN	SIGNAL
1	LCDVCC	2	GND
3	B CLK-	4	B CLK+
5	GND	6	B DATA2-
7	B DATA2+	8	GND
9	B DATA1-	10	B DATA1+
11	NC	12	NC
13	B DATA0+	14	BDATA0-
15	GND	16	A CLK+
17	A CLK-	18	GND
19	A DATA2+	20	A DATA2-
21	I2C CLK	22	A DATA1+
23	A DATA1-	24	I2C DATA
25	A DATA0+	26	A DATA0-
27	NC	28	NC
29	LCDVCC	30	LCDVCC

28. CON7 (+12V,+5V,+3.3V for SATA HDD Power)

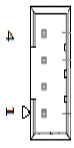


PIN	DEFINE
1	+12V
2	GND
3	+3.3V
4	+5V

29. JP1 (COM2 Type Setting)

STATUS	SETTING
1-2	RS-232
3-4	RS-422
5-6	RS-485

30. CON2 (+12V,+5V,+3.3V for SATA HDD Power)



PIN	DEFINE
1	+12V
2	GND
3	+3.3V
4	+5V

31 FAN2 (CPU Fan Connector)					
	<table><tr><th>PIN</th><th>SIGNAL</th></tr><tr><td>1</td><td>GND</td></tr><tr><td>2</td><td>12V</td></tr><tr><td>3</td><td>FAN Speed Detect</td></tr></table>				

Note1, 2 Power smart functions

Definition

1. Soft off cycle:
   A period when received power off signal to generate a off signal (A 500mS pulse, High- Low –High or Low-High-Low depends on SIO configuration, to mother board's Power Button Pin)
2. Hard Off cycle:
   A period when system off (S5) to stand by removed (G3). In another word, the A period of 5VSB on to off (when system already off)

Notes: S5 and G3 is follow by ACPI

Mode description

The main power-in is controlled by the switch on chassis.
Maximum 16 Modes adjusted by 4 switches. (Mode 8 to mode 15 are reserved for future use).

Mode 0: ATX mode.

A. 5V Standby is always on.

B. Input voltage is not monitored.

C. Power on/off is controlled by remote switch

D. Local Switch priority is higher than remote switch. This is controlled by hardware.

Mode 1: AT mode

A. Power output immediately after input is present.

B. Power can only be turned off by turning off local switch. The remote switch will be ignored by Power smart function. In this mode the BIOS shall be set to AT mode.

Smart Mode (Mode 2 to Mode 7)

Mode 2: See Figure 1

A. Power on is controlled by **ignition (remote switch does not make any action to power on)**.

B. **Power on retry:** If the motherboard cannot be turned on normally (/PSON does not go to low), the Power smart function will turn off 5VSB, and then turn on 5VSB and retry. Send “on” pulse to motherboard again. The power board will re-try this procedure until successfully turn on motherboard.

C. Power smart function sends “ON” pulse to motherboard when ignition is on for more than 2 seconds.

D. Power smart function will ignore the status change of ignition after ON pulse is send to motherboard for 3 minutes. After this period, the Power smart function will start to check its status. This can avoid an improper “OFF” process before the OS is complete booted.

E. Power off is controlled by **remote switch or ignition. Remote switch** has higher priority than ignition. (Remote switch is optional).

F. Power smart function sends “off” pulse to motherboard **5 seconds** after ignition is turned off or remote switch is pressed. (Soft delay)

G. Power smart function will ignore the status change of ignition and remote switch during the “OFF” pulse is sent out and the /PSON return to high. This will avoid an improper ON process before the motherboard is completely shot off.

H. The **digital output (optional)** will go from high to low at the moment that “OFF” pulse is sent to motherboard. The low state will be kept until /PSON back to high. If the /PSON does not back to high within 3 minutes, the Power smart function will enter a retry cycle (described in next section).

I. **Power off retry:** If the motherboard cannot be shouted down normally (/PSON does not go to high) within 3 minutes after “OFF” pulse is sent, the Power smart function will send off pulse to motherboard again. If the motherboard still cannot be shouted down normally, the power output will be turned off directly. (Figure 3)

J. Hard off delay: **1 minutes,** During this period system can be turned on again if the off procedure already finished and power button is pushed again(or ignition on again)

Mode 3:

A. Same as mode 2 except for soft/hard off delay time

B. Soft off delay: **1 minute**

C. Hard off delay: **5 minutes**

Mode 4:

A. Same as mode 2 except for soft/hard off delay time

B. Soft off delay: **30 minute**

C. Hard off delay: **2 Hours**

Mode 5: See Figure 2

Same as mode 2 except that the power on is controlled by **remote switch.**

A. Power on is controlled by **remote switch (ignition must be turned on 2 seconds before remote switch is pressed)**.

B. AR-PW0932V sends off pulse to motherboard **5 seconds** after ignition is turned off or remote switch is pressed. (Soft delay)

C. Hard off delay: **1 minutes**

Mode 6:

A. Same as mode 5 except for soft/hard off and delay

B. Soft off delay: **1 minute**

C. Hard off delay: **5 minutes**

Mode 7:

A. Same as mode 5 except for soft/hard off and delay

B. Soft off delay: **30 minute**

C. Hard off delay: **2 Hours**

Mode15(Software control mode):

A. Setting by AP

B. Software mode default as Hardware mode 2

C. Soft off delay time can be set

D. Hard off delay time can be set

E. In-Vehicle system power on by ignition or Remote button can be set

F. Show Ignition status / Voltage(for AP only)

G. Create a button "Set default"

Plan AP screen→

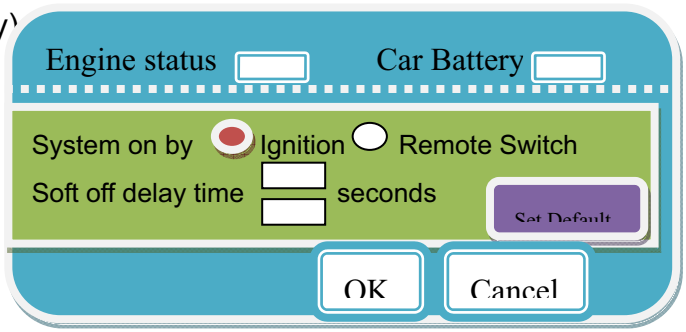


Table1. Control Mode

Mode	Soft OFF Delay	Hard OFF delay	Power ON Control	Power OFF Control
0 (ATX)	No	No	Remote Switch	Remote Switch
1(AT)	No	No	Local Switch	Local Switch
2	5 seconds	1 minute	Ignition	Ignition / Remote Switch
3	1 minute	5 minutes	Ignition	Ignition / Remote Switch
4	30 minutes	2 hours	Ignition	Ignition / Remote Switch
5	5 seconds	1 minute	Remote Switch	Ignition / Remote Switch
6	1 minute	5 minutes	Remote Switch	Ignition / Remote Switch
7	30 minutes	2 hours	Remote Switch	Ignition / Remote Switch
15 (Software control)	By user setting	By user setting	By user setting	Ignition / Remote Switch

Another function of Smart Mode

1. If ignition turns back “ON” during “Off” Delay, Power smart function will stay in operation. “Off” signal will not be send to motherboard. The “Off” Delay will re-start after next ignition off.

2. Power input monitoring(before system boot on, during runtime, during soft off delay): The Power smart function will constantly monitor the input voltage. If the input voltage is below **X Voltage (the standard might have 5% tolerance)**, the AR-PW0932V will not start the power on procedure. When Power smart function has ran in operation and the battery drops below **Y Voltage (with 5% tolerance)** more than 10 seconds the Power smart function will shut down the motherboard following the standard shut down procedure. If the input voltage recovers in 10 seconds over **Y Voltage (with 5% tolerance)** again, the Power smart function will continue to run. (Figure 4)if this happens, ignition shall be off and on again (Mode 2, 3, 4) or press the remote switch(Mode 5,6,7) if you want to turn on system again.

	For 12V car battery	**For 24V car battery**
X value	**11.2**	**23**
Y value	**10.8**	**22.5**

6 BIOS Setting

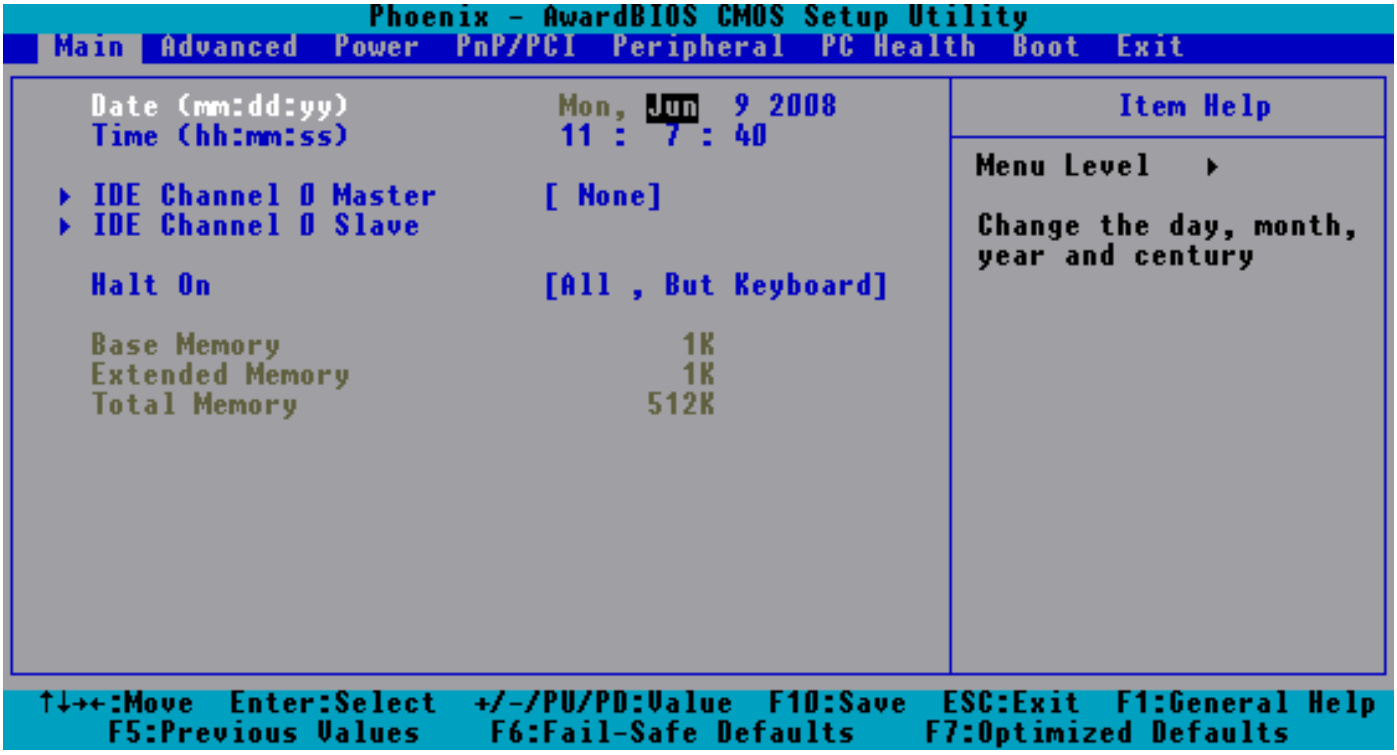
This chapter describes the BIOS menu displays and explains how to perform common tasks needed to get the system up and running. It also gives detailed explanation of the elements found in each of the BIOS menus. The following topics are covered:

- Main Setup
- Advanced Chipset Setup
- PnP/PCI Setup
- Peripherals Setup
- PC Health Setup
- Boot Setup
- Exit Setup

Once you enter the Award BIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. Use the arrow keys to highlight the item and then use the <Pg Up> <Pg Dn> keys to select the value you want in each item.

6.1 Main Setup

The <Main Setup> choice allows you to record some basic hardware configuration in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run this Setup option, however, if you change your system hardware configuration, the onboard battery fails, or the configuration stored in the COMS memory was lost or damaged.



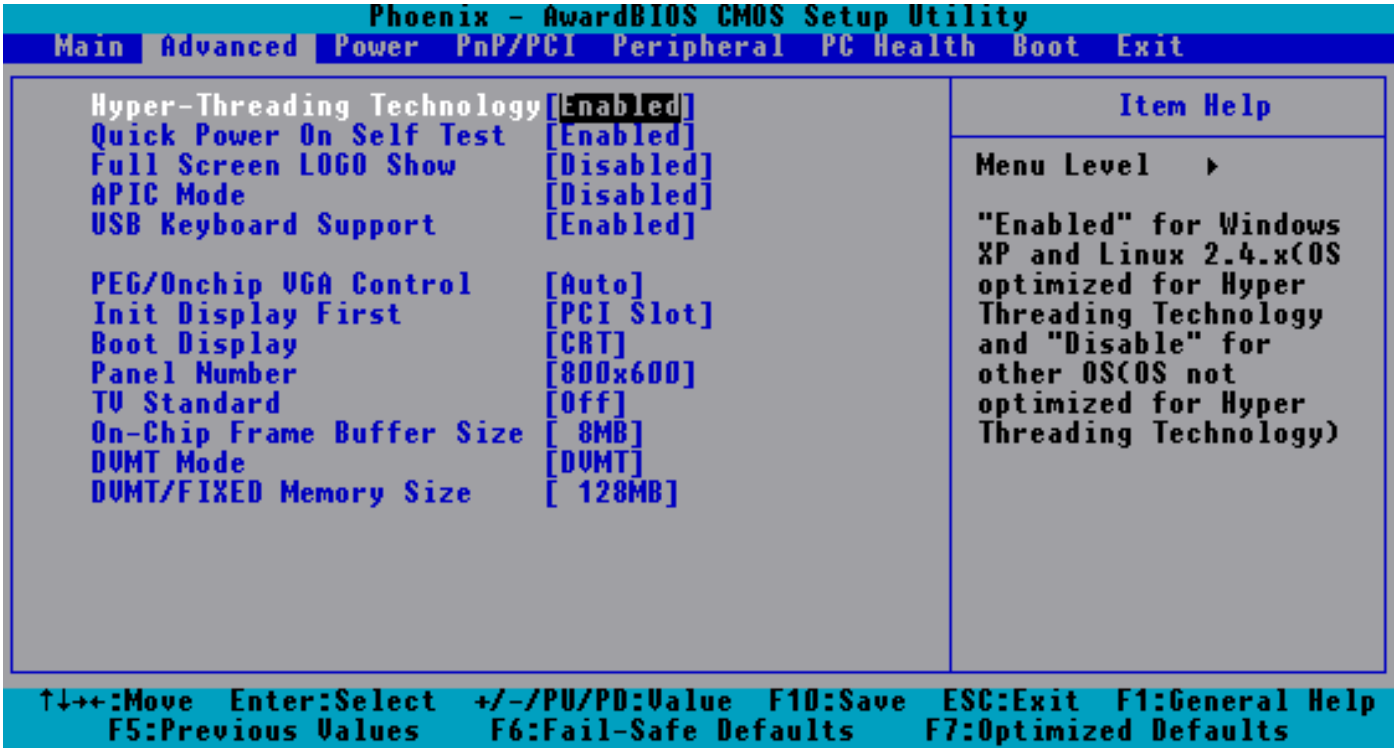
Note: Listed at the bottom of the menu are the control keys. If you need any help with the item fields, you can press the <F1> key, and it will display the relevant information.

Option	Choice	Description
Date Setup	N/A	Set the system date. Note that the 'Day' automatically changes when you set the date
Time Setup	N/A	Set the system time
IDE Channel 0 Master/Slave	N/A	The onboard PCI IDE connectors provide 1 channel for connecting up to 2 IDE hard disks or other devices. The first is the "Master" and the second is "Slave", BIOS will auto-detect the IDE type.

Halt On	All Errors, No Errors, All but keyboard.	Select the situation in which you want the BIOS to stop the POST process and notify you.

6.2 Advanced Chipset Setup

This section allows you to configure and improve your system and follows you to set up some system features according to your preference.

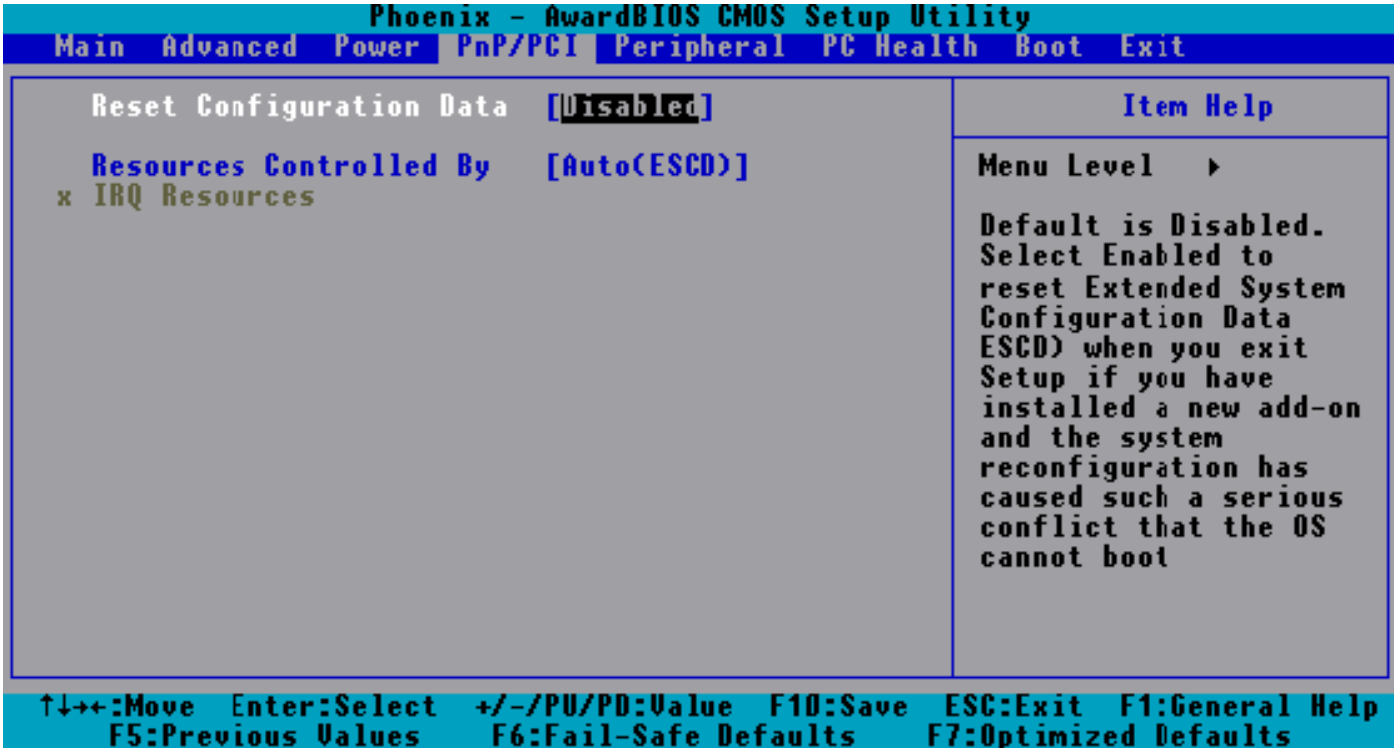


Option	Choice	Description
Quick Power On Self Test	Enabled Disabled	This category speeds up Power On Self Test (POST) after you have powered up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.
Full Screen Logo Show	Enabled Disabled	Select Edabled to show the OEM full screen logo if you have add-in BIOS.
USB Keyboard Support	Enabled Disabled	Select Enabled if you system contains a Universal Serial Bus (USB)controller and you have a USB keyboard.
On-Chip Frame Buffer Size	1Mb 8Mb	This Item is for setting the Frame Buffer (Share system memory as display memory).
Boot Display	CRT LCD CRT+LCD TV	This Item is to set display device TV function only support on AR-B5230SD

Panel Type	800x600, 1024x768, 1280x1024	This Item cab Set the LVDS panel resolution that you want
DVWT mode	FIXED DVMT Both	This item sets the mode for dynamic video memory thechology (DVMT).
DVWT/FIXED Memory Size	64Mb 128Mb	This item sets the DVMT size

6.3 PnP/PCI Setup

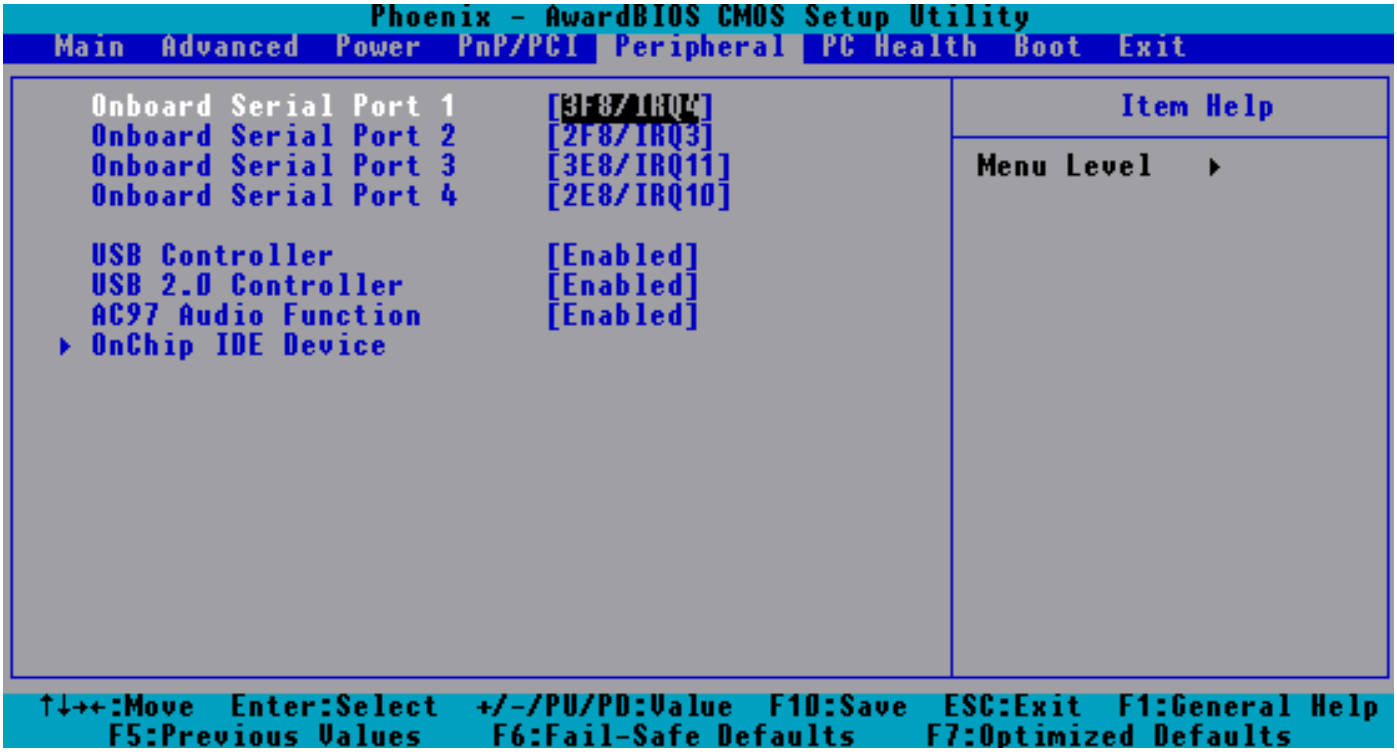
The option configures the PCI bus system. All PCI bus system on the system use INT#, thus all installed PCI cards must be set to this value.



Option	Choice	Description
Reset Configuration Data	Enabled Disabled	Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup. If you have installed a new add-on and the system reconfiguration has caused such a serious conflict, then the operating system cannot boot.
Resources Controlled By	Auto(ESCD) Manual	The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95. If you set this field to “manual,” then you may choose specific resources by going into each of the submenus.
IRQ Resources	N/A	When resources are controlled manually, assign a type to each system interrupt, depending on the type of the device that uses the interrupt

6.4 Peripherals Setup

This option controls the configuration of the board's chipset. Control keys for this screen are the same as for the previous screen.

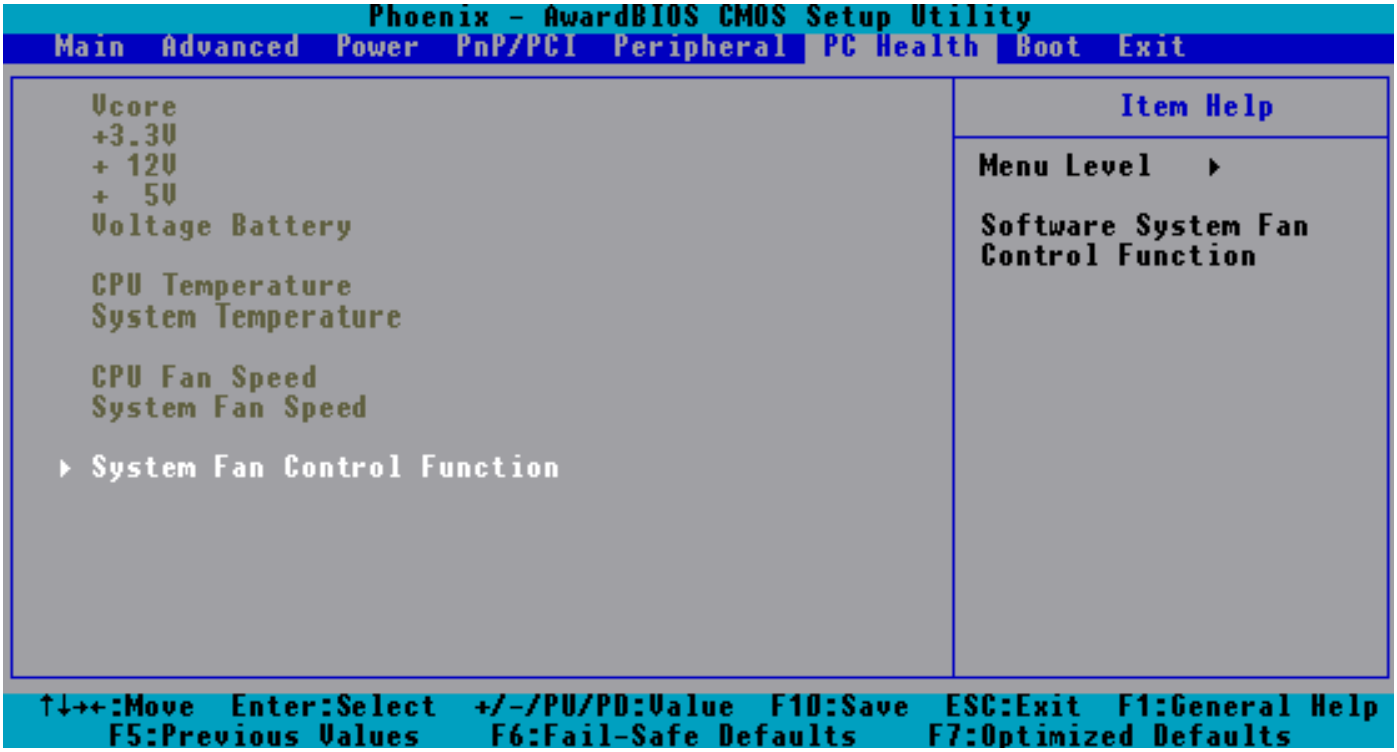


Option	Choice	Description
Onboard Serial Port 1 **Onboard Serial Port 2** **Onboard Serial Port 3** **Onboard Serial Port 4**	Serial Port 1: 3F8 / IRQ4 Serial Port 2: 2F8 / IRQ3 Serial Port 3: 3E8 / IRQ11 Serial Port 4: 2E8 / IRQ10	Select an address and the corresponding interrupt for each serial port.
USB Controller	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bue (USB)controller and you have USB peripherals
USB 2.0 Controller	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bue (USB) 2.0 controller and you have USB peripherals

AC97 Auido Function	Enabled Disabled Audio/Modem	This item allows you to decide to enable/disable AC97 Audio
On chip IDE DEVICE	Enabled Disabled	The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.

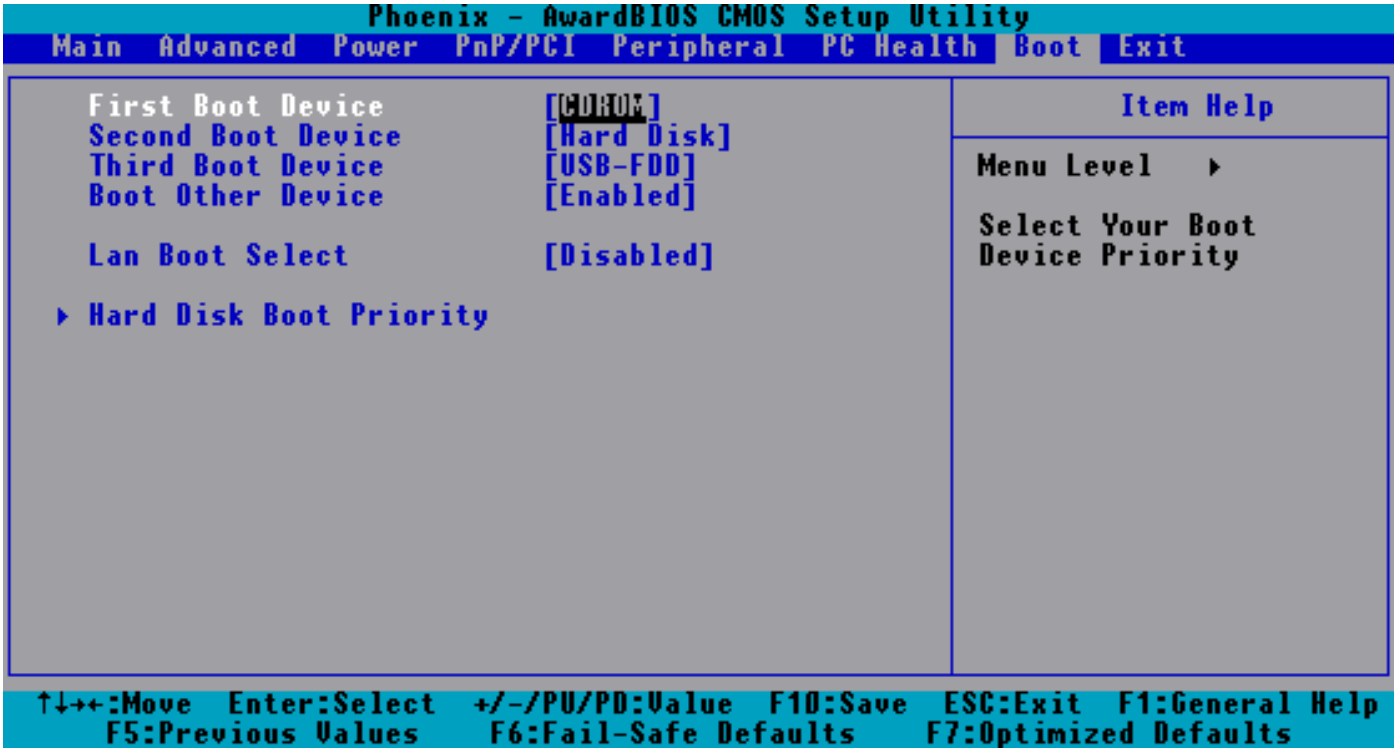
6.5 PC Health Setup

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds, and voltages.



6.6 Boot Setup

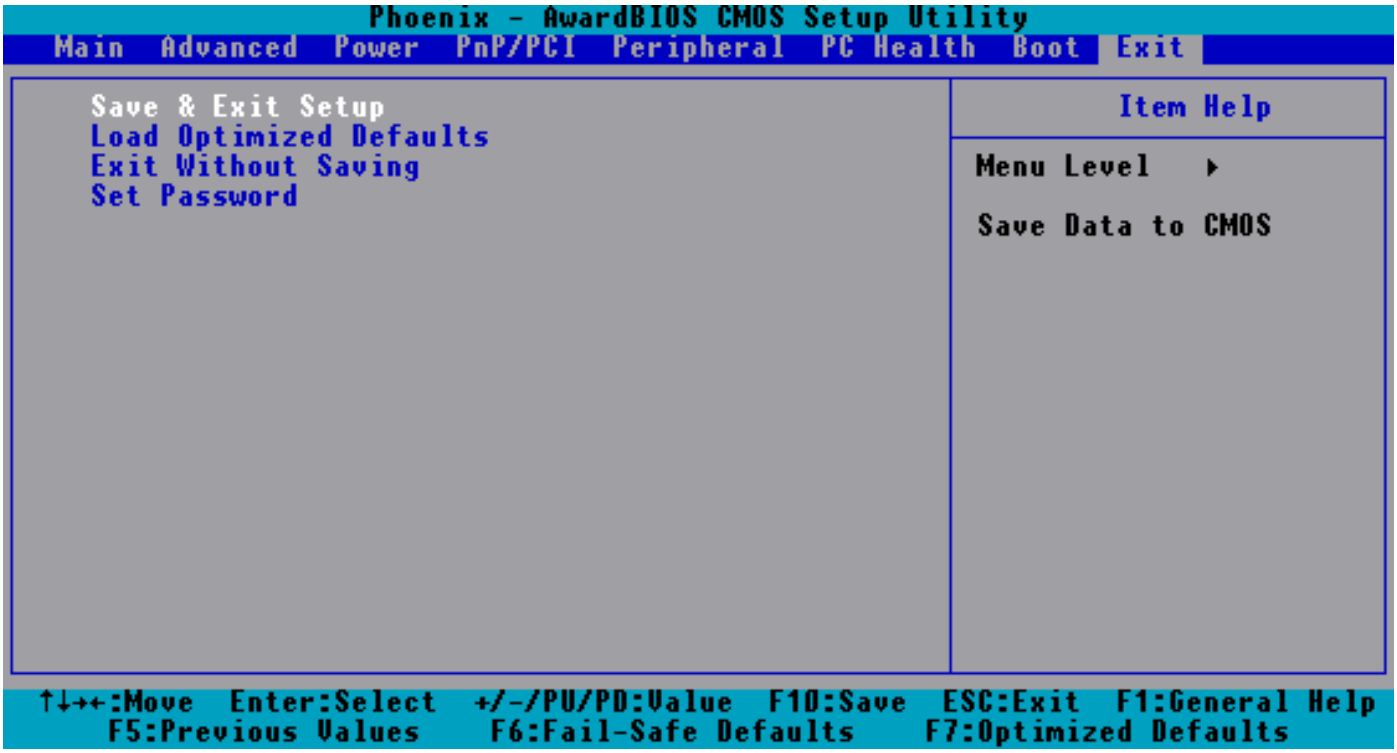
This section is used to exit the BIOS main menu. After making your changes, you can either save them or exit the BIOS menu and without saving the new values.



Option	Choice	Description
First / Second / Third Boot Device/Other Boot Device	Hard Disk CDROM USB-FDD USB-CDROM LAN Disabled	The BIOS attempts to load the operating system from the devices in the sequence selected in these items.
LAN Boot Select	Enabled Disabled	These fields allow the system to search for an OS from LAN
Hard Disk Boot Priority	N/A	These fields set the Boot Priority for each Hard Disk

6.7 Exit Setup

This section is used to configure exit mode.



Option	Choice	Description
Save & Exit Setup	Pressing <Enter> on this item for confirmation: **Save to CMOS and EXIT (Y/N)? Y**	Press “Y” to store the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again
Load Optimized Defaults	When you press <Enter> on this item you get a confirmation dialog box with a message like this: **Load Optimized Defaults (Y/N)? N**	Press ‘Y’ to load the default values that are factory-set for optimal-performance system operations.

Exit Without Saving	Pressing <Enter> on this item for confirmation: **Quit without saving (Y/N)? Y**	This allows you to exit Setup without storing any changes in CMOS. The previous selections remain in effect. This shall exit the Setup utility and restart your computer.
Set Password	Pressing <Enter> on this item for confirmation: **ENTER PASSWORD:**	When a password has been enabled, you will be prompted to enter your password every time you try to enter Setup. This prevents unauthorized persons from changing any part of your system configuration. Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previous password from the CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password. To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

7 FCC Warning statement

7.1.FCC Part 15.21 information for user

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

71.1. FCC Part 15.19

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation

7.2.For mobile devices without co-location condition

(the transmitting antenna is installed or located more than 20cm away from the body of user and near by person)

FCC RF Radiation Exposure Statement:

a. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

b. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installation, may cause harmful interference to radio communication. 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 measures:

-Reorient or relocate the receiving antenna

-Increase the separation between the equipment and receiver

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected

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