User's Manual

Sapphire Pure Platinum A85XT

AMD A85X chipset for FM2 Socket Mainboard

Manual Revision 1.0

August 28, 2012

Federal Communications Commission (FCC) Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions contained in this manual, may cause harmful interference to radio and television communications. However, there is no guarantee that interference will not occur in a particular installation.

If this product 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 product 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.

Note1: Connecting this device to peripheral devices that do not comply with Class B requirements, or using an unshielded peripheral data cable, could also result in harmful interference to radio or television reception

Note2: The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this product.

Note3: To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables

CE: Radiation of EN 55022 & Immunity of EN 55024

Waste Electrical and Electronic Equipment (WEEE) Statement

To protect the global environment, this product must be sent to separate collection facilities for recovery and recycling.

DISPOSAL

Do not dispose of this product as unsorted municipal waste. Collect such waste separately for special treatment.

Table of Contents

Chapter 1 Introduction

1-1 Mainboard Specifications

CPU

➢ AMD® socket FM2 A10/A8/A6/A4 series Trinity processor

Chipset

➢ AMD A85X (Hudson-D4) chipset

Graphics

➢ AMD on-die Radeon™ HD 7xxx GPU

➢ Four independent displays and supporting triple view with VGA and DVI and either HDMI or Diskplay port

Port	Supported resolution
VGA	1920x1200@60MHz
DVI-D	2560x1600@60Hz and 30bpp (Dual Link)
HDMI 1.4a	1920x1080@60MHz and 30bpp
Display Port 1.2	4096x2160@60 Hz (16:9) or 4096x2400@60 Hz (16:10)

System Memory

➢ Four 240-pin DDR3 SDRAM DIMM sockets

➢ Supports 1.5v DDR3-1066/ 1333/ 1600+ DIMMs with dual channel architecture

➢ Supports x16 and x8 DIMMs, non-ECC, unbuffered DIMMs

➢ Supports up to 32GB system memory

USB Ports

➢ Eight USB 2.0 ports (four at rear panel, four onboard headers), supporting transfer speed up to 480Mbps

➢ Four USB 3.0 ports (two at rear and two onboard headers) backward compatible with USB 2.0, supporting transfer speeds up to 4.8Gbps

➢ Supports wake-up from S3 and S4 modes

➢ Support power charge function

  - Front panel 2 USB 3.0 ports also support power charge function under S5 mode

SATA Ports

➢ Seven SATA3 ports with 6Gb/s data transfer rate

➢ Supports integrated RAID 0, RAID 1, RAID 5 and RAID 10

➢ Supports AHCI (Advanced Host Controller Interface)

Onboard LAN

➢ One Gigabit Ethernet from Realtek® RTL8111F Gigabit controller

Bluetooth

➢ Atheros AR3011 is a highly integrated, all-CMOS, single chip with Bluetooth® 2.1 + EDR supported

Onboard Audio

➢ Supports 8-channel High-Definition audio from Realtek ALC892 codec

➢ Supports rear panel Optical S/PDIF output

➢ Supports Jack-detection, Multi-Streaming and Front Panel Jack-retasking function

Expansion Slots

➢ Two PCI-Express 2.0 x16 slots

➢ One PCI-Express 2.0 x4 slot

➢ Two PCI-Express 2.0 x1 slots

➢ Two PCI Slots

➢ One Mini PCI-E x1 or mSATA connector

➢ Supports AMD® CrossFire™ Technology

➢ Supports AMD® Dual Graphics Technology

   * Please refer to detail configuration at 2-6 Installing Expansion Cards

   * For Dual Graphics, please visit the AMD website for detail
http://www.amd.com/us/products/technologies/dual-graphics

I/O

➢ Onboard Fintek F71889A LPC bus I/O controller

➢ Supports Hardware Monitoring for fan speed, CPU and system temperature

Back Panel I/O Ports

➢ 1 x PS/2 Keyboard/Mouse port

- ➢ 4 x USB 2.0 ports
- ➢ 1 x Bluetooth
- ➢ 1 x Optical S/PDIF Out connector
- ➢ 1 x HDMI port
- ➢ 1 x Display port
- ➢ 1 x VGA port
- ➢ 1 x DVI-D port
- ➢ 1 x RJ45 LAN port
- ➢ 2 x USB 3.0 ports
- ➢ 6 Audio jacks

Internal I/O Connectors

- ➢ 1 x 24-pin ATX power connector
- ➢ 1 x 8-pin ATX 12V power connector
- ➢ 7 x SATA3 connectors
- ➢ 4 x USB2.0 headers
- ➢ 2 x USB3.0 headers
- ➢ 1 x Front Panel header
- ➢ 1 x S/PDIF header
- ➢ 1 x Front Audio header
- ➢ 1 x Serial Port header
- ➢ 1 x 4-pin CPU Fan header
- ➢ 5 x 3-pin Fan headers

BIOS

- ➢ 32Mb SPI Flash with AMI based BIOS
- ➢ User Friendly graphics interface QBIOS (Quick Control UEFI BIOS)
- ➢ S_BIOS easily update and back up at BIOS control panel
- ➢ Supports ACPI (Advanced Configuration and Power Interface)
- ➢ Dual BIOS with select switch

Special Features

- ➢ Onboard diagnostic 7-Segment LED with CPU temperature display
- ➢ Onboard buttons include Clear CMOS, RESET and POWER
- ➢ Supports CPU Power Vcore Load-line adjust function

➢ Supports Windows based OC utility "Trixx" and Win7 HW monitor gadget tool

➢ IR digital PWM design (VCore and VDIMM)

➢ Supports additional DVI card (optional)

Form Factor

➢ ATX form factor of 305mm x 245mm

Operating systems:

➢ Supports Windows Vista, Windows 7 and Windows 8

1-2 Package Contents

Your Sapphire mainboard comes with the following accessories.

1. Mainboard	
2. I/O Shield	**3. Quick Installation Guide**
4. Driver DVD	**5. USB3.0 Front Panel Cable** (Optional)
6. SATA Data Cable *6	**7. DVI card (Optional)**

1-3 Mainboard Layout

The following figure shows the location of components on the mainboard.   See following page for description.
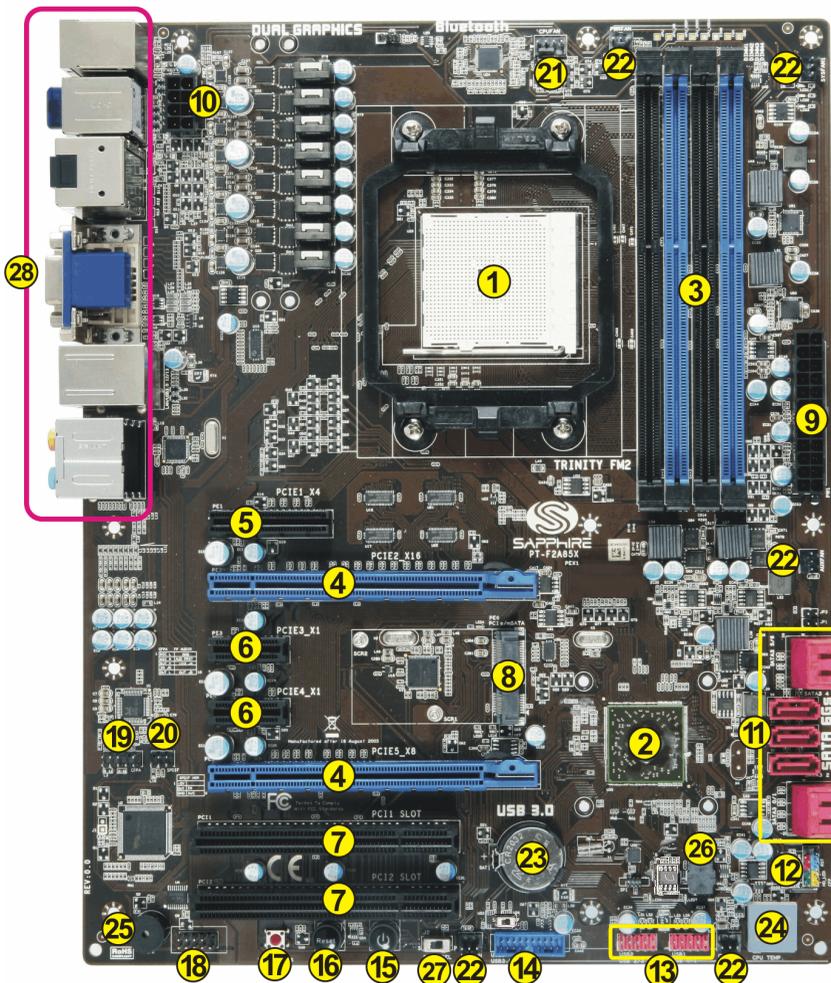
Note:
Picture is for reference only, actual board may be slightly different.

Item	Component description
1	AMD CPU Socket FM2
2	AMD A85X (Hudon-D4) Chip
3	DDR3 DIMM Slots 1-4
4	PCI-E 2.0 x16 Slots *2
5	PCI-E 2.0 x4 Slots *1
6	PCI-E 2.0 x1 Slot *2
7	PCI Slot *2
8	Mini PCI-E x1/mSATA Connector
9	24-Pin ATX Power Connector
10	8-pin ATX_12V Power Connector
11	SATA3 Connectors *7
12	Front Panel Header
13	USB 2.0 Header *4
14	USB 3.0 Header *2
15	Power Button
16	Reset Button
17	Clear CMOS Button
18	Serial port Header
19	Front Panel Audio Header
20	S/PDIF Header
21	CPU Fan Header
22	3-pin Fan Header *5
23	Mainboard Battery
24	Debug LED Display
25	PC Speaker
26	32Mb SPI Flash
27	Dual BIOS Switch
28	Back Panel Connectors (see below for detail)

I/O Back Panel

The I/O back panel for this mainboard is shown below. When installing the mainboard into the computer case, use the bundled I/O shield to protect the back panel.
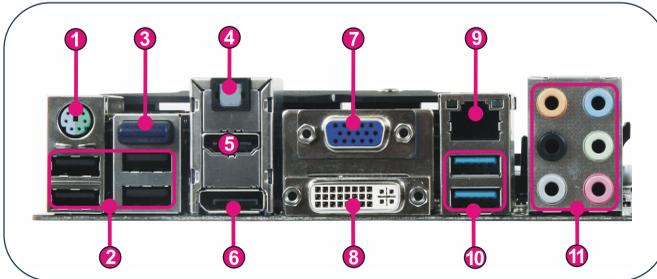
1. PS/2 Keyboard/Mouse Port
   This connector is used for a keyboard or mouse. You can plug a PS/2 keyboard or mouse directly into this connector.

2. USB 2.0 Ports (four)
   The mainboard provides an OHCI (Open Host Controller Interface) Universal Serial Bus root for attaching USB devices such as a keyboard, mouse or other USB-compatible devices. Supports data transfer rates up to 480Mb/s.

3. Bluetooth
   Bluetooth wireless technology is an interface intended for wireless control/data communication

4. Optical S/PDIF-Out
   This SPDIF (Sony & Philips Digital Interconnect Format) connector is used for digital audio transmission to external speakers/amplifier through an optical fiber cable.

5. The HDMI (High-Definition Multimedia Interface) provides an all-digital audio/video interface to transmit the uncompressed audio/video signals and is HDCP compliant. Connect the HDMI audio/video device to this port.

6. Display Port
   The DisplayPort is a digital display interface standard. This connector is used to connect a monitor with DisplayPort inputs.

7. VGA Port
   The VGA female port provides connection to analogue VGA monitors.

8. DVI-D Port

The DVI-D (Digital Visual Interface-Digital) port provides a high-speed digital interconnection between the computer and its display device. Connect a monitor that supports DVI-D connection to this port. The DVI-D port does not support analogue VGA monitors using a passive DVI to VGA adapter.

Multi Display Configurations:

This mainboard provides four ports for video output: Display port, HDMI, DVI-D, and VGA. Also provides an optional DVI card.

Please refer to table below for multi display configurations supported.

Port	Single View	Dual View									Triple View				
DP [Note1]	V	V	V				V				V		V		
HDMI	V			V	V			V				V		V	
DVI-D	V	V		V		V			V		V	V	V	V	V
DVI card [Note2]	V						V	V	V	V			V	V	V
VGA	V		V		V	V				V	V	V			V

Note1:
 - Please always connect the display port before booting the system; otherwise the display port will not work.

Note2:
 - Need to set Dual-link DVI Card Support option to "Enabled" in BIOS setup when using additional DVI card (please refer to page 16 for detail).
 - When using single DVI interface on triple display, the DVI port of back panel need to be used first.

8. LAN Port with LEDs

The mainboard provides standard RJ-45 jacks for connecting to a Local Area Network (LAN). Two LEDs are built into the RJ-45 LAN connector. These LEDs indicate the status of the LAN.

LED	LED Color	LED state	Indicates
A	Green	Off	LAN link is not established
		On	LAN link is established
		Blinking	LAN activity is occurring
B	N/A	Off	10 Mb/s data rate
	Green	On	100 Mb/s data rate
	Yellow	On	1000 Mb/s data rate

9. USB 3.0 ports (two)
    USB 3.0 ports are backward compatible with USB 2.0 devices. Supports data
    transfer rates up to 4.8Gb/s (SuperSpeed).

10. Audio ports
    This mainboard provides 2, 6 or 8 channel audio. It is easy to differentiate
    between the audio functions by referring to the color of the jacks.

Ports	2 channel	6 channel	8 channel
Blue	Line-In	Line-In	Line-In
Lime	Line-Out	Front Stereo-Out	Front Stereo-Out
Pink	Mic-In	Mic-In	Mic-In
Orange	--	Center/Subwoofer	Center/Subwoofer
Black	--	Rear Stereo-Out	Rear Stereo-Out
Gray	--	--	Side Stereo-Out

<u>Chapter 2 Installation</u>

2-1 Before You Begin

Please take note of all precautions before you install anything on to the mainboard or change any of the mainboard settings.

Turn off the power to your system and discharge your body's static electric charge by touching a grounded surface—for example, the metal surface of the power supply—before performing any hardware procedure.

The manufacturer assumes no liability for any damage, caused directly or indirectly, by improper installation of any components by unauthorized service personnel. If you do not feel comfortable performing the installation, consult a qualified computer technician.

Damage to system components, the mainboard, and injury to you may result if power is applied during installation.

2-2 Installing the I/O Shield

The mainboard comes complete with an I/O shield. When installed in the chassis, the shield blocks radio frequency transmissions, protects internal components from dust and foreign objects, and promotes correct airflow within the chassis.

Install the I/O shield before installing the mainboard in the chassis. Place the shield inside the chassis. Press the shield into place so that it fits tightly and securely. If the shield does not fit, obtain a properly sized shield from the chassis supplier.

2-3 Securing to the Chassis

When installing the mainboard, you have to secure the mainboard into the chassis by fastening with nine screws. Please refer to your chassis manual for instructions.

2-4 Installing the CPU and Cooler

Follow the steps below to install the CPU & cooler correctly.

1. Open the socket lever and rise to a 90 degree angle.

2. Align the CPU pin one (small triangle marking) and gently insert the CPU into the socket then close the socket lever.

   📌 Note:
   Apply some thermal paste on surface of CPU for better heat dispersion.

3. Place the cooler on the CPU. Engage one side of the clip onto the CPU mount first then press down the other side of the clip.

4. Turn the lever from left to right to fasten the CPU cooler. If in doubt, refer to your CPU cooler manual for installing the cooler.

5. Connect the 4-wire fan cable to the 4-pin CPUFAN header on the mainboard.
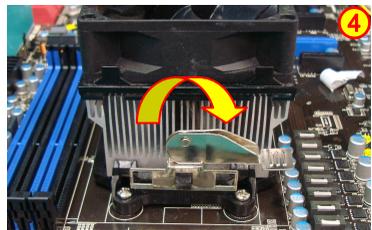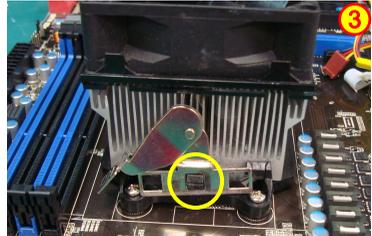
PS:
Pictures for installation reference only, the actual board may be slightly different.

2-5 Installing System Memory

This mainboard has four 240-pin DIMM sockets for DDR3 memory. These slots support 1GB, 2GB, 4GB and 8GB DDR3 DIMMs up to a maximum 32GB.

Make sure that you install memory modules of the same type and density in the different channel DIMM slots for Dual-Channel mode.

There must be at least one memory bank populated to ensure normal operation and you can insert the memory module into any of the DIMM slots.

Memory configurations

Use the following the recommendations for installing memory.

DIMM Quantity / Location	1 DIMM (Single Channel)	2 DIMMs (Dual Channel)	3 DIMMs (Dual Channel)	4 DIMMs (Dual Channel)
DIMM#1 (Black)	--	--	--	V
DIMM#2 (Blue)	V	V	V	V
DIMM#3 (Black)	--	--	V	V
DIMM#4 (Blue)	--	V	V	V

("V" = Memory installed, "--"= No memory installed)

Memory Installation

DDR3 and DDR2 memory modules are physically different. Please only install DDR3 DIMMs in this mainboard.

To install the DIMM, follow these steps:

1. Pull both clips on either side of the slot outwards. Align the DIMM module with the slot.

2. Press modules straight down until the plastic clips close and the module fits tightly into the DIMM slot. Push clips inwards to make sure they are in place and the memory is securely fitted.

2-6 Installing Expansion Cards

The mainboard provides two PCI Express 2.0 x16 slots, one PCI Express 2.0 x4 slot, two PCI Express 2.0 x1 slots, two PCI slots and one Mini PCI-E x1 or mSATA slot.

PCIE1_ X4
PCI-E2.0 x4 slot (with x4 link, Black)

PCIE2_X16/X8
PCI-E2.0 x16 slot (with x16/x8 link, Blue)

PCIE3_X1
PCI-E2.0 x1 slot (with x1 link, Black)

PE6
Mini PCI-E2.0 x1 or mSATA slot

PCIE4_X1
PCI-E2.0 x1 slot (with x1 link, Black)

PCIE5_X8
PCI-E2.0 x16 slot (with x8 link, Blue)

PCI1
PCI slot

PCI2
PCI slot
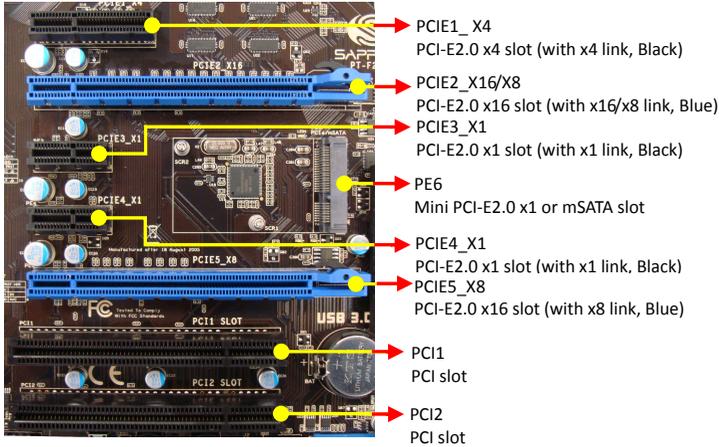
PCI-E slot

The design of this motherboard supports AMD CrossFire™ technology for support of multiple graphic cards on PCIE2 and PCIE5 slots with 2x8 mode.

Please refer to PCI Express card configuration table.

Slot	Channel	Bandwidth
PCIE1	APU	G2 x4
PCIE2	APU	G2 x16/x8
PCIE3	FCH	G2 x1
PCIE4	FCH	G2 x1
PCIE5	APU	G2 x8

Note: The G2 is PCIE Gen 2.

Installing a PCI Express card:

1. Place the card in an available PCI Express slot and press down on the card until it is completely seated in the slot. If the card is not seated properly, it could cause a short across the pins.

2. Secure the card's metal bracket to the back panel of the chassis with a screw.

The design of this motherboard supports AMD CrossFire™ technology for support of multiple graphic cards. Please refer to the location of slots and recommended configuration table for PCI-E operating mode to get the best performance possible.

Recommended configuration table		
Slot location VGA card	PCIE2_x16/x8 (Blue)	PCIE5_x8 (Blue)
1 VGA card	x16	
2 VGA cards	x8	x8

Mini PCI-E slot/mSATA slot

This slot is used to connect compliant Mini PCI-Express x1 devices such as a wireless network card, USB card or connect a mSATA device.

To install a Mini PCI-E card:

1. Remove screws and align the notch on the Mini PCI card edge connector with the tab in the slot.
2. Plug the Mini PCI card firmly into the slot at a 45-degree angle, and until it clicks into place.
3. Fasten Mini PCI-E card onto the nut with accompanied screws.

To install a mSATA device:
The installation is the same as Mini PCI-E card; please refer to the steps as above.

PCI Slots

The two PCI slots provided supports a variety of expansion cards such as a LAN card, USB card, SCSI card and other cards that comply with PCI specifications. When installing a card into the PCI slot, be sure that it is fully seated. Secure the card's metal bracket to the chassis back panel.

Installing additional DVI card

This mainboard can be provided with an optional DVI card. This allows you to connect to an additional display.

Please refer to the following setups for installing DVI card:

1. Connect an additional monitor cable to the DVI port of the back panel of your mainboard and make sure the monitor is plugged in and turned on.

2. Insert the optional DVI card into the **PCIE2_X16/X8** slot and ensure the card is properly seated on the slot.

3. Power on the system, press <Delete> to enter BIOS setup during the POST. Go to BIOS Chipset Page, select **GFX Configuration** item and set **Dual-link DVI Card Support** option to "**Enabled**".

4. Select <F4> to save settings and exit BIOS setup. The procedure is complete after the system restart.

2-7 Connecting Cables

This section takes you through all the necessary connections on the mainboard.

Connecting Power Supply Cables

- 24-pin ATX Power

PW1 is the main power supply connector. Make sure that the power supply cable pins are properly aligned with the connector on the mainboard. Firmly plug the power supply cable into the connector and make sure it is secure.

🔖 Note:

> If you'd like to use 20-pin ATX power supply, please plug in your power supply cable aligned with pins 1 & 13. The 24-pin main power connector is backwardly compatible with ATX power supplies with 20-pin connectors.

- 8-pin ATX 12V Power

PW2, the 8-pin ATX 12V power connector, is used to provide power to the CPU. Align the power plug to the connector and press firmly until seated.

24-pin ATX Power
connector

8-pin ATX Power
connector

Connecting Serial ATA (SATA) Cables

SATA cables support the Serial ATA protocol. Each cable can be used to connect one SATA drive to the mainboard.

The S1 to S5 connectors (total 7 ports) are SATA3 connectors and works at speeds of up to 6G/s and support RAID 0, 1, 10, 5 functions.

S1:
SATA3 0 (bottom)
SATA3 1 (top)

S2: SATA3 2

S3: SATA3 3

S4: SATA3 4

S5:
SATA3 5 (bottom)
SATA3 6 (top)

1

Ground
TX+
TX-
Ground
RX-
RX+
Ground
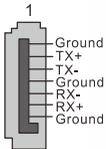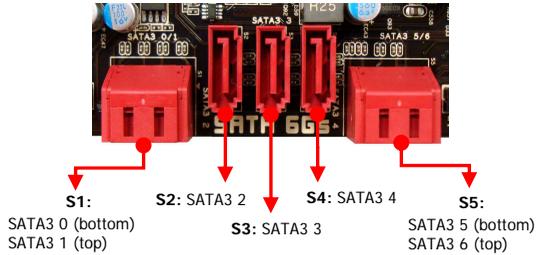
Attach one end of the SATA cable to one of the SATA connectors on board and attach the other end of the cable to the SATA drive

Connecting to the Internal Headers and Connectors

Front Panel Header

The front panel header on this motherboard is used to connect the front panel switches and LEDs.

▶ PWR_LED

Attach the front panel power LED cable to these two pins of the connector. The Power LED indicates the system's status.

System Status	Power LED indicates
On	The LED is on
Off	The LED is off
S3	The LED will blink
S4	The LED is off

▶ PW_ON

Attach the power button cable from the case to these two pins. Pressing the power button on the front panel turns the system on and off rather than using the onboard button.

▶ HD_LED

Attach the hard disk drive indicator LED cable to these two pins. The HDD indicator LED indicates the activity status of the hard disks.

▶ RESET

Attach the Reset switch cable from the front panel of the case to these two pins. The system restarts when the RESET switch is pressed.
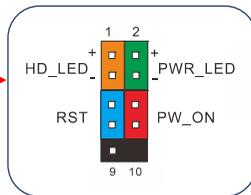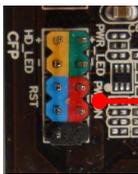
Header	Pin	Signal
HD_LED	1	HD_PWR
	3	HD Active
PWRLED	2	PWR LED+
	4	PWR LED-
RESET	5	Ground
	7	RST BTN
PWRSW	6	PWR BTN
	8	Ground
No Connect	9	+5V
Empty	10	Empty

USB2.0 Headers

This mainboard contains four (4) USB 2.0 ports that are exposed on the rear panel of the chassis. This mainboard also contains three 10-pin onboard header connectors that can be used to connect to four (4) external USB 2.0 devices.

Refer to the following steps:
1. Secure the bracket to either the front or rear panel of your chassis (not all chassis are equipped with the front panel option).
2. Connect the cable(s) to the USB 2.0 header on the mainboard.
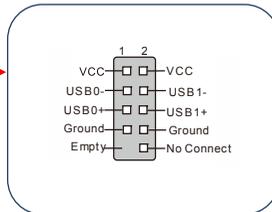
USB3.0 Headers

This mainboard contains Two (2) USB 3.0 ports that are exposed on the rear panel of the chassis. This mainboard also contains one onboard header connector that can be used to connect to two (2) external USB 3.0 devices.
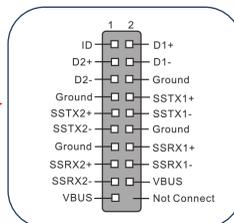
This mainboard is provided optional USB3.0 front panel cable accessories

For real panel, refer to the following steps:
1. Secure the bracket to rear panel of your chassis.
2. Connect the cable(s) to the USB 3.0 header on the mainboard.

For front panel, refer to the following steps:
1. Remove the cover plate from the selected drive bay.
2. Push the USB3.0 cable into the drive bay. Align the screw holes with the appropriate holes in the drive bay and tighten the mounting screws.
3. Connect the USB3.0 connector of cable to the USB3.0 header on the mainboard.

CFPA Header

This header allows you to connect the front panel audio. The audio connector supports HD audio standard.
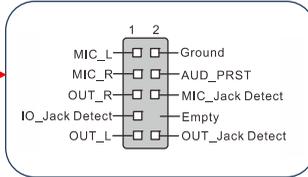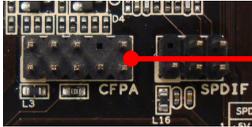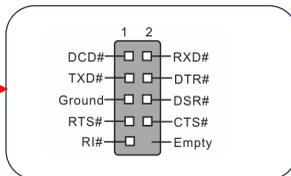

S/PDIF Header

This header is used to connect S/PDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.
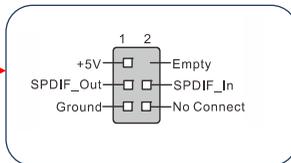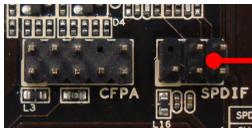
Serial Port Header

The Serial port header (COM1) can provide one serial port via an optional COM port cable.
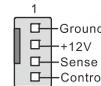

Note:
The pin definition of header and standard DB9 male pin out is different.

Fan Headers

There are six fan headers (CPUFAN, SYSFAN, SYSFAN1, PWRFAN, CHAFAN, and AUXFAN) on the motherboard. Three of these fans (CPUFAN, PWRFAN, and CHAFAN) can be speed detected/controlled and displayed in the Hardware Health Configuration section of the CMOS Setup. The fans are automatically turned off after the system enters S3, S4 or S5 mode.

CPUFAN PWRFAN   SYSFAN1

CPUFAN
1
Ground
+12V
Sense
Control

Note:
The CPU fan cable can be either a 3-pin or a 4-pin connector. Connect a 3-pin connector to pins 1, 2, and 3on the mainboard connector.

PWRFAN / CHAFAN
1
Ground
+12V
Sense

SYSFAN / SYSFAN1 / AUXFAN
1
Ground
+12V
NC
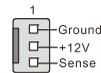
SYSFAN   AUXFAN   CHAFAN
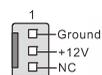
2-8 Diagnostics LED

This mainboard provides a two-digit POST code to show why the system may be failing to boot. It is useful during a troubleshooting situation. This Debug LED will also display the current CPU temperature after the system has fully booted into the operating system.

Please find a list of debug codes at the end of this manual.

Debug LED
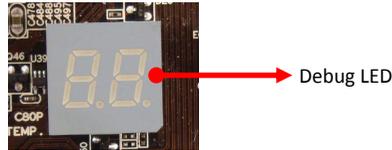
2-9 LED Status Indicators

This mainboard provides three LEDs to indicate the system's status.

- DIMM LED (LED1, Yellow): When the Memory slot is functional, this LED is on.

- POWER LED (LED2, Green): When the System is powered on, this LED is on.

- STANDBY LED (LED3, Blue): When the System is in Standby Mode, this LED is on. This LED will remain on as long as the motherboard is receiving constant power.

DIMM LED
Standby LED
Power LED
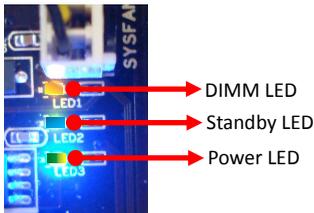
2-10 Onboard Buttons

These onboard buttons include RESET CMOS, RESET and POWER, which allow you to easily clear the CMOS, reset the system and turn on/off the system.
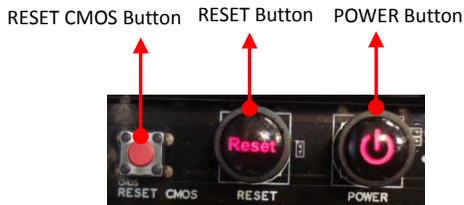
Reset CMOS Button

The mainboard uses the CMOS RAM to store some of the system configuration. The CMOS can be cleared by pressing the RESET CMOS button.

Reset and Power Button

These onboard buttons allow you to easily turn on/off the system and allow for easy debugging and testing of the system during troubleshooting situations.

The Reset button with LED indicates the activity status of the hard disk drives and will blink accordingly.

The Power button with LED indicates the system's status. When the system is powered on, the LED blinks red.

RESET CMOS Button   RESET Button   POWER Button

Note:
To clear CMOS settings by RESET CMOS Button, please make sure the system is in 5V Standby mode (when the blue LED is on), otherwise the clear CMOS action is invalid.
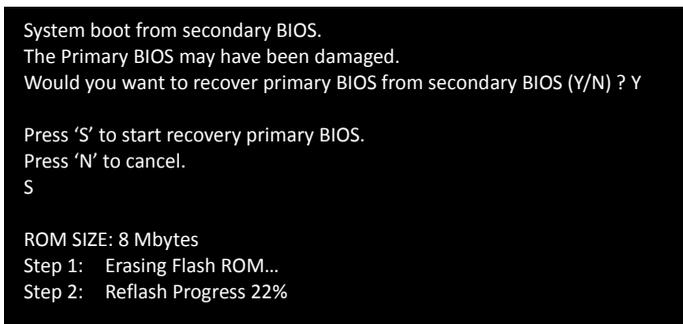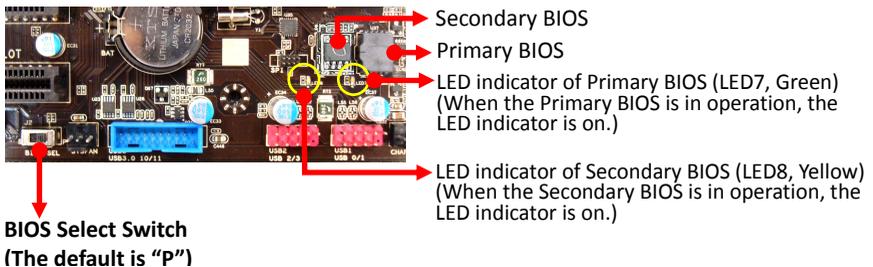
2-11 Dual BIOS Switch

• Recover BIOS:

This mainboard includes dual onboard BIOS, (Primary and Secondary BIOS),
When the primary BIOS is corrupted or has failed, the system will **automatically**
switch to secondary BIOS to boot and ensure normal system operation.

Please refer to the following steps:

1. Turn on the system power.

2. The system can detect and automatically switch to the secondary BIOS in
   order to boot when the primary BIOS has failed,, despite the BIOS switch
   position.

3. Follow the instructions below to update the Primary BIOS.

```
System boot from secondary BIOS.
The Primary BIOS may have been damaged.
Would you want to recover primary BIOS from secondary BIOS (Y/N) ? Y

Press 'S' to start recovery primary BIOS.
Press 'N' to cancel.
S

ROM SIZE: 8 Mbytes
Step 1:   Erasing Flash ROM...
Step 2:   Reflash Progress 22%
```

Note: It is recommended that you select 'S' to recover the primary BOIS,
      Otherwise, the system will repeat the above steps on the next
      boot.

Secondary BIOS

Primary BIOS

LED indicator of Primary BIOS (LED7, Green)
(When the Primary BIOS is in operation, the
LED indicator is on.)

LED indicator of Secondary BIOS (LED8, Yellow)
(When the Secondary BIOS is in operation, the
LED indicator is on.)

BIOS Select Switch
(The default is "P")

- **Flash BIOS:**

  If the primary (secondary) BIOS is corrupted or outdated, you can use the USB pen drive or AMI Windows flash utility to do flashing BIOS process to recover the primary (secondary) BIOS.
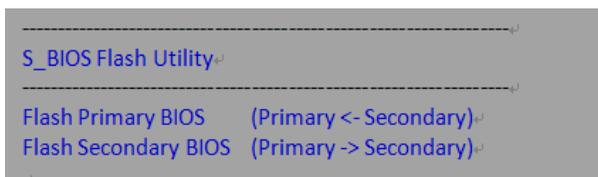
  Flash primary BIOS:

  Make sure the BIOS select switch is at "P" position and power on. Flash the BIOS using either USB pen drive under DOS or AMI Windows flash utility under Windows.

  Flash secondary BIOS:

  Make sure the BIOS select switch is at "S" position and power on. Flash the BIOS using either USB pen drive under DOS or AMI Windows flash utility under Windows.

- **Flash BIOS from within BIOS:**

  S_BIOS Flash Utility

  The BIOS update tool, S_BIOS, allows you to update the system BIOS without having to enter MS-DOS or Windows environment. Please refer to "4-4 S_BIOS Flash Utility" section for details.

  Flash Primary BIOS

  This item allows you to copy the Secondary BIOS to Primary BIOS.

  Flash Secondary BIOS

  This item allows you to copy the Primary BIOS to Secondary BIOS.

Chapter 3 Configuring the BIOS

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

3-1 Select Boot Device

Select Boot Device Menu allows you to set the first boot device without entering BIOS Setup.

During Power On Self-Test (POST), you can press the <**F7**> key to enter select boot device menu. The system will directly boot from the device configured in Boot Menu.

3-2 Enter BIOS Setup

The BIOS is the communication bridge between hardware and software. Correctly setting the BIOS parameters is critical to maintain optimal system performance.

Use the following procedure to change BIOS settings.

1.   Power on the computer.

2.   Press the <**Del>** or <**F2>** key when the following message briefly shows

upon the bottom of the display during Power On Self-Test (POST).

Press F1 to continue, DEL to enter Setup.

Pressing Del takes you to the BIOS Setup Utility.

🔖 Note1: It is strongly recommended that you do not change the default BIOS settings. Changing some settings could damage your computer.

🔖 Note2: The BIOS options in this manual are for reference only. BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version from our official website

Control Keys

Please check the following table for the function description of each Control key. You can also use the mouse to click your required item.

Control Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F2>	To load previous values for all the settings
<F3>	To load optimal default values for all the settings
<F4>	To save changes and exit the SETUP UTILITY
<ESC>	To jump to the Exit Screen or exit the current screen

3-3 Main Menu

When entering the BIOS Setup Utility, the main menu screen appears. This main menu includes the system overview and displays the basic system configuration, such as BIOS information, memory size and system date/time.
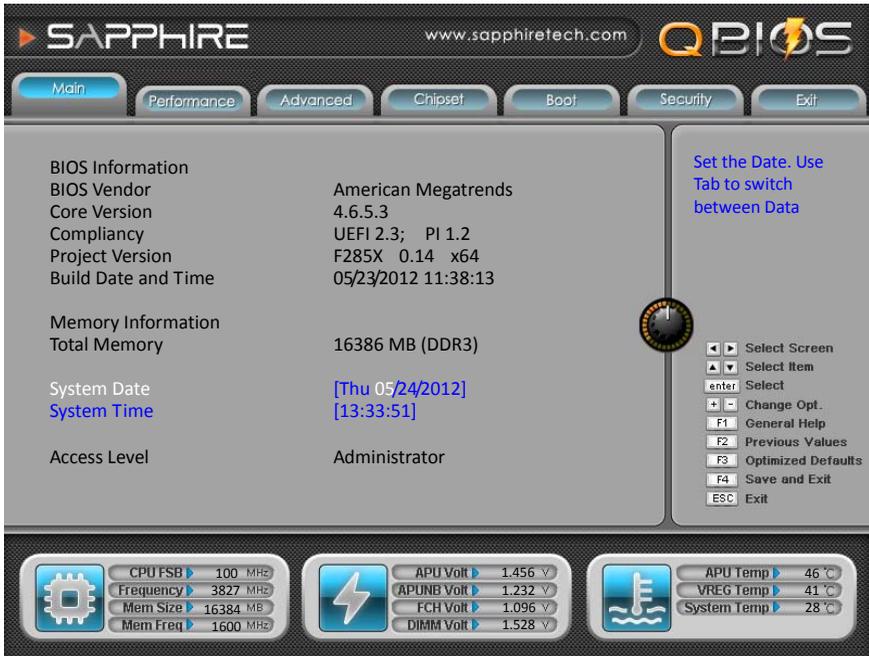
BIOS Information
This field displays the current BIOS version, build date and ID information etc.

Memory Information
Able to display current system memory size.

System Date
Allows you to set the system date. The format is
<Day><Month><Date><Year>.

   [Day]   Weekday from Sun. to Sat., this is automatically displayed by BIOS.
  [Month] The month from 1 to 12.
  [Date]   The date from 1 to 31 can be keyed by numeric function keys.
  [Year]   The year can be adjusted by users.

System Time
Allows you to set the system time. The time format is
<hour>:<minute>:<second>.

Access Level
This item is used to limit the user access level.

3-4 Performance Menu

The Performance menu allows you to specify your settings for CPU, memory, voltage control and overclocking. Press <Enter> to display the configuration options.
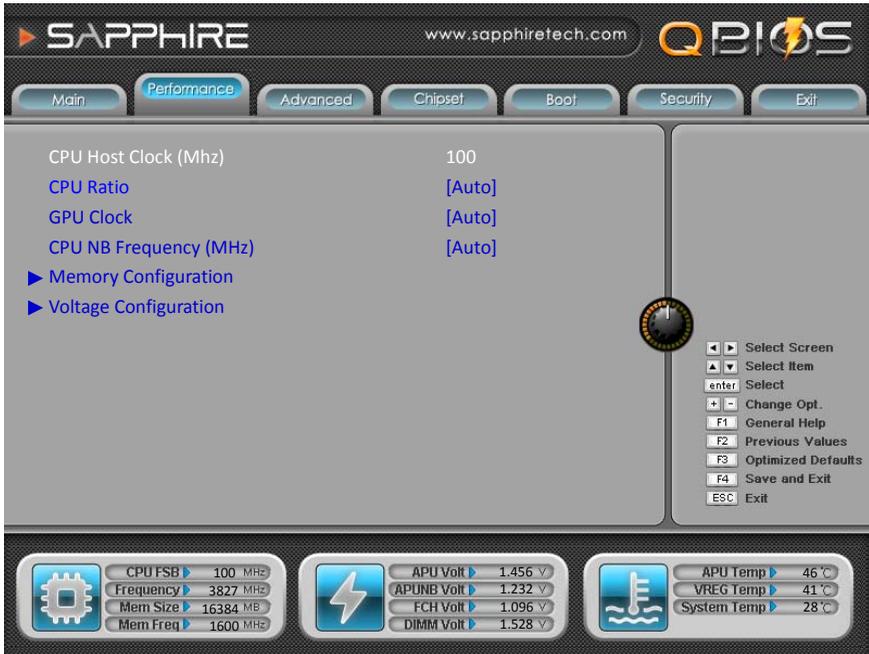
CPU Host Clock
Allows you to select the CPU Host Clock.

CPU Ratio
Allows the select the CPU Ratio.
Options: Auto, 16X ~ 58X.

GPU Clock
Allows the select the GPU Clock.
Options: Auto, Manual.

CPU NB Frequency (MHz)
Allows the select the CPU NB Frequency.
Options: Auto, 800MHz ~ 5000MHz in 100MHz increments.

▶ **Memory Configuration**

Memory Clock
Allows you to select the system memory clock.
Options: Auto, DDR3-800, DDR3-1066, DDR3-1333, DDR3-1600, DDR3-1866, DDR3-2133.

CAS# Latency (tCL)
Set the CAS latency time. CAS stands for Column Address Strobe or Column Address Select.
Options: Auto(11), 5 ~ 14..

RAS# to CAS# Delay (tRCD)
Set the RAS to CAS Delay time for Read/Write commands to the same bank.
Options: Auto(11), 2 ~ 19.

Row Precharge Time (tRP)
Set the Row Precharge time. This is the Precharge-to-Active or Auto-to-Refresh of the same bank.
Options: Auto(12), 2 ~ 19.

RAS# Active Time (tRAS)
Set the minimum RAS# active time.

Options: Auto(28), 8 ~ 40.

Write Recovery Time (tWR)
Set the internal Write to Read recovery time.
Options: Auto(12), 5 ~ 16.

Row Refresh Cycle Time (tRFC)
Set the minimum refresh recovery time.
Options: Auto(160), 90ns, 110ns, 160ns, 300ns, 350ns.

Write to Read Delay (tWTR)
Set the internal Write to Read command delay.
Options: Auto(6), 4 ~ 9.

Active to Active Delay (tRRD)
Set the Row Active to Row Active delay.
Options: Auto(5), 4 ~ 9.

Read CAS# Precharge (tRTP)
Set the Read to Precharge delay.
Options: Auto(6), 4 ~ 10.

Four Active Windows Delay (tFAW)
Set the Four Active Windows Delay.
Options: Auto(24), 6 ~ 42.

Row Cycle Time (tRC)
Set the Row Cycle Time. The minimum time in cycles it takes a row to complete a full cycle.
Options: Auto(39), 10 ~ 54.

Refresh Rate (tREF)
Set the clock cycles between RAM refreshes.
Options: 7.8us, 3.9us.

Command Rate
The amount of time in cycles when the chip select is executed and the commands can be issued.
Options: 1T, 2T.

▶ **Voltage Configuration**

CPU Loadline
Loadline Control function is a safety measure to protect the CPU.
Options: Enabled, Disabled.

APU Voltage Mode
Allows you to select the APU voltage mode.
Options: Offset Mode, Fixed Mode.

APU Voltage
Allows you to adjust the APU voltage.
Options: Fixed Mode : 1.20000V ~1.95000V in 0.00625V increments.
　　　　　　 Offset Mode : +0.00625V ~ +0.60000V in 0.00625V increments.

FCH
Allows you to adjust the AMD FCH voltage.
Options: 1.10V ~2.30V in 0.01V increments.

DIMM DQ Voltage
Allows you to adjust the DQ Voltage of DIMM Slot voltage.
Options: 0.00V ~ 0.64V in 0.01V increments..

DIMM CA Voltage

Allows you to adjust the DIMM CA of DIMM Slot voltage.

Options: 0.00V ~ 0.64V in 0.01V increments.

VDDR

Allows you to adjust the VDDR voltage.

Options: 1.20V ~1.83V in 0.01V increments.

VDDP

Allows you to adjust the PCI Express I/O ring voltage.

Options: 1.20V ~1.83V in 0.01V increments.

VDDA

Allows you to adjust the filtered PLL voltage.

Options: 2.50V ~3.31V in 0.01V increments.

DIMM Voltage

Allows you to adjust the DIMM Slot voltage.

Options: Auto, 1.50V ~2.30V in 0.01V increments.

DIMM VTT

Allows you to adjust the DIMM VTT voltage.

Options: 0.00V ~ 0.64V in 0.01V increments.

3-5 Advanced Menu

The Advanced menu items allow you to change the settings for the CPU, USB and other system devices. Press <Enter> to display the configuration options.

▶ **S5 RTC Wake Settings**

Wake system with Fixed Time
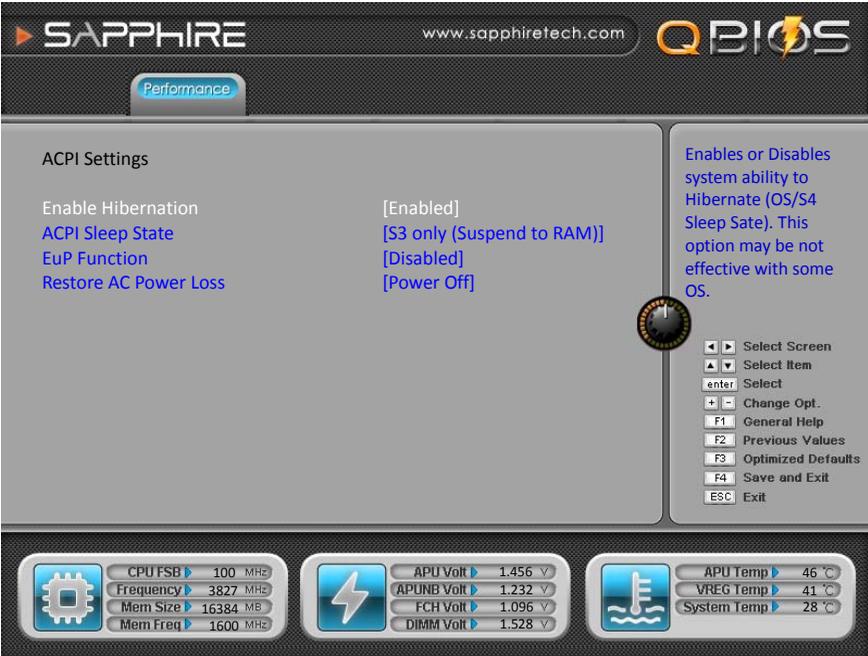Enable or disable system wake on alarm event. When enabled, system will wake on the hr:min:sec specified.
Options: Enabled, Disabled.

Wake system with Dynamic Time
Enable or disable system wake on alarm event. When enabled, system will wake on the current time + Increase minutes(s).
Options: Enabled, Disabled.

▶ **ACPI Settings**

Enable Hibernation
Enables system ability to Hibernate (OS/S4 Sleep Sate). This option may be not effective with some OS.
Options: Enabled, Disabled.

ACPI Sleep State
Selects the power saving modes for ACPI function.
Options: Suspend Disabled, S3 only (Suspend to RAM).

EuP Function
Enables the EuP (Energy Using Products) function, allows BIOS to switch off some power at S5 state to get system ready for the EuP requirement to reduce power consumption.
Options: Enabled, Disabled.

Restore on AC Power Loss
Enables your computer to automatically restart or return to its last operating status after power returns from a power failure.
Options: Power off, Power on, Last State.

▶ **CPU Configuration**

AMD Cool'n' Quiet
Cool'n'Quiet is a CPU speed throttling and power saving technology by AMD.
Options: Enabled, Disabled.

PSTATE Adjustment
Allows you to adjust startup P-state level.
Options: PState 0, PState 1, PState 2, PState 3, PState 4, PState 5, PState 6, PState 7.

PPC Adjustment
Allows you to adjust PPC object.
Options: PState 0, PState 1, PState 2, PState 3, PState 4, PState 5.

NX Mode
Enable or disable No-execute page protection function.
Options: Enabled, Disabled.

SVM Mode
Enables the CPU SVM(Secure Virtual Machine) function.
Options: Enabled, Disabled.

AMD Core Performance Boost

Allows you to disable AMD Core Performance Boost.
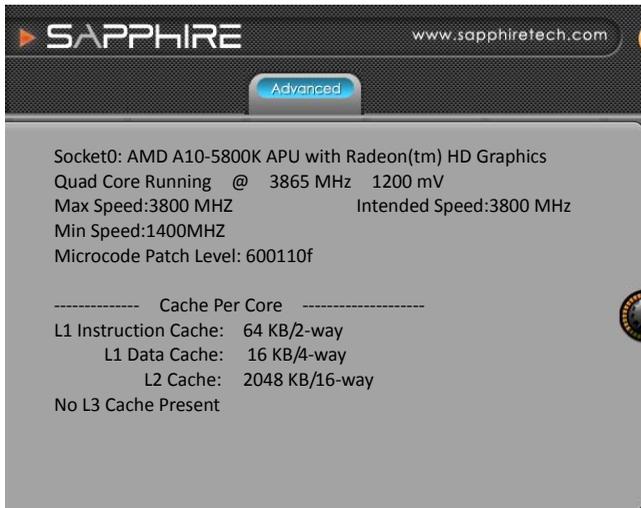
Options: Auto, Disabled.

C6 Mode

Allows you to select C6 State for processor.

Options: Enabled, Disabled.

▶ **CPU Information**

Displays the CPU related information.

▶ **SATA Configuration**

SATA Configuration		
OnChip SATA Type	[AHCI]	RAID
6 AHCI/RAID Port	[Disabled]	AHCI
		Legacy IDE
SATA Port 0 (AHCI Mode)	ST3250318AS (250.0	
SATA Port 1 (AHCI Mode)	DVDRW SATA 2 ATAPI	
SATA Port 2 (AHCI Mode)	Not Present	
SATA Port 3 (AHCI Mode)	Not Present	
SATA Port 4 (IDE Mode)	Not Present	
SATA Port 5 (IDE Mode)	Not Present	
SATA Port 6 (IDE Mode)	Not Present	
mSATA Port (IDE Mode)	Not Present	
ESATA PORT on PORT0	[Disabled]	
ESATA PORT on PORT1	[Disabled]	
ESATA PORT on PORT2	[Disabled]	
ESATA PORT on PORT3	[Disabled]	
ESATA PORT on PORT4	[Disabled]	
ESATA PORT on PORT5	[Disabled]	
ESATA PORT on PORT6	[Disabled]	

◄ ► Select Screen
▲ ▼ Select Item
enter Select
+ - Change Opt.
F1 General Help
F2 Previous Values
F3 Optimized Defaults
F4 Save and Exit
ESC Exit

CPU FSB ▶ 100 MHz
Frequency ▶ 3827 MHz
Mem Size ▶ 16384 MB
Mem Freq ▶ 1600 MHz

APU Volt ▶ 1.456 V
APUNB Volt ▶ 1.232 V
FCH Volt ▶ 1.096 V
DIMM Volt ▶ 1.528 V

APU Temp ▶ 46℃
VREG Temp ▶ 41℃
System Temp ▶ 28℃

OnChip SATA Type
Allows you to set the onboard Serial SATA type.
Options: IDE, AHCI, RAID.

- IDE Mode: Use the SATA hard disk drivers as Parallel ATA storage devices.
- RAID Mode: Create a RAID 0, 1, 0+1, 5 configuration
- AHCI Mode: Use the AHCI (Advanced Host Controller Interface) to enable advanced SATA features for improved performance with NCQ and Hot-plug features

6 AHCI/RAID Port
Allows you to enable the AHCI/RAID port support.
Options: Enabled, Disabled.

SATA Port 0 ~ SATA Port 6, mSATA Port
This field shows SATA ports connection state.

ESATA PORT on PORT 0 ~ 6
Allows you to enable the per ESATA PORT support.

▶ USB Configuration

Legacy USB Support
Allows you select legacy support for USB devices.
Enabled: Enables Legacy USB support.
Disabled: Keep USB devices available only for EFI application.
Auto: Disables legacy support if no USB devices are connected.

USB3.0 Support
Enables USB3.0 (XHCI) controller support.
Options: Enabled, Disabled.

XHCI Hand-off
This is a workaround for OSs' without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
Options: Enabled, Disabled.

EHCI Hand-off
This is a workaround for OSs' without EHCI hand-off support. The XHCI ownership change should be claimed by EHCI driver.
Options: Enabled, Disabled.

USB transfer time-out
The time-out value for control, bulk, and interrupt transfers.
Options: 1 sec, 5 sec, 10 sec, 20 sec.

Device reset time-out
Sets USB mass storage devices start unit command time-out.
Options: 10 sec, 20 sec, 30 sec, 40 sec.

Device power-up delay
Maximum time the device will take before it properly reports itself to the Host controller. 'Auto' uses default values; for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.
Options: Auto, Manual.

▶ **Super IO Configuration**

▶ **Serial Port 0 Configuration**

Serial Port
Enables the Serial Port support.
Options: Enabled, Disabled.

Change Settings

Select an optimal setting for super I/O device.

Options: Auto, IO=3F8H; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,10,11,12

▶ **H/W Monitor**

APU/ VREG/ System

Displays the current APU, onboard regulator and system temperature.

APU/ Power/ Chassis Fan Speed

Displays the current APU, Power and Chassis Fan Speed

VCC3V/ APU/ APU-NB/ FCH/ DIMM/ APU_VDDR/ APU_VDDP/ VSB3V/ VBAT

The current voltages are automatically detected and displayed by the system.

▶ **Smart Fan Configuration**

CPU Fan Type
Allows you to select the CPU Fan type.
Options: PWM FAN (4 pin), Linear FAN (3 pin)

CPU Fan Mode Setting
This item controls the speed of the various fans on the motherboard.
Choose [SmartFan] when you want the speed of the fans automatically controlled based on temperature. To set the fan speed to a constant rate, select [Manual Mode] and then enter the speed from 0% to 100%.
Set the desired speed for the Power and Chassis fans from 0% to 100%. The system defaults to 100%.

▶ **Onboard Device**
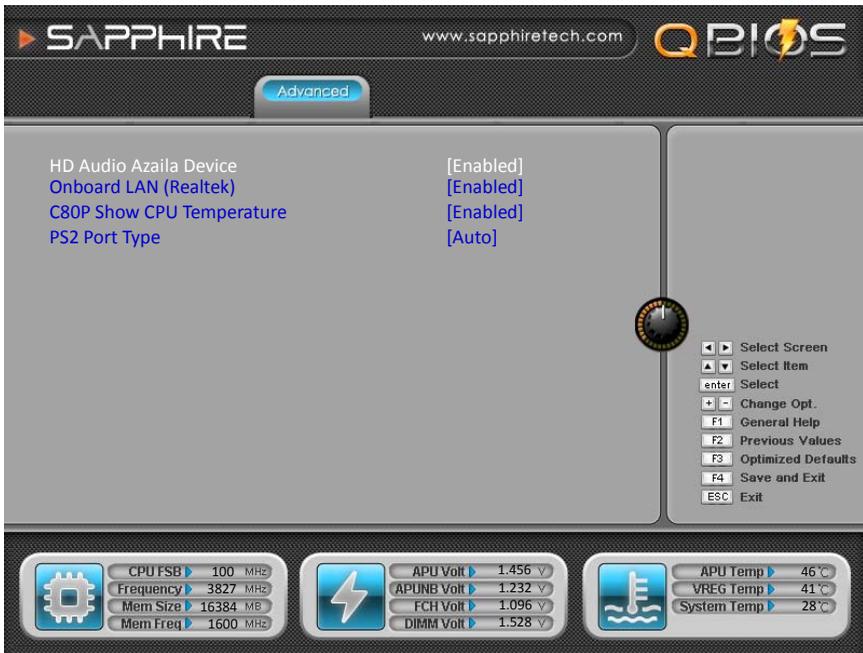
HD Audio Azaila Device
Enables the onboard High Definition Audio controller.
Options: Enabled, Disabled.

Onboard LAN (Realtek)
Enables the onboard Giga Lan function by Realtek for LAN.
Options: Enabled, Disabled

C80P Show CPU Temperature
Enables the onboard POST Port LED to display CPU temperature.
Options: Enabled, Disabled.

PS2 Port Type
The item allows you to select the type of PS2 port.
Options: Auto, Keyboard, Mouse.

3-6 Chipset Menu

The chipset menu items allow you to change the advanced chipset settings.
Press <Enter> to display the sub-menu.
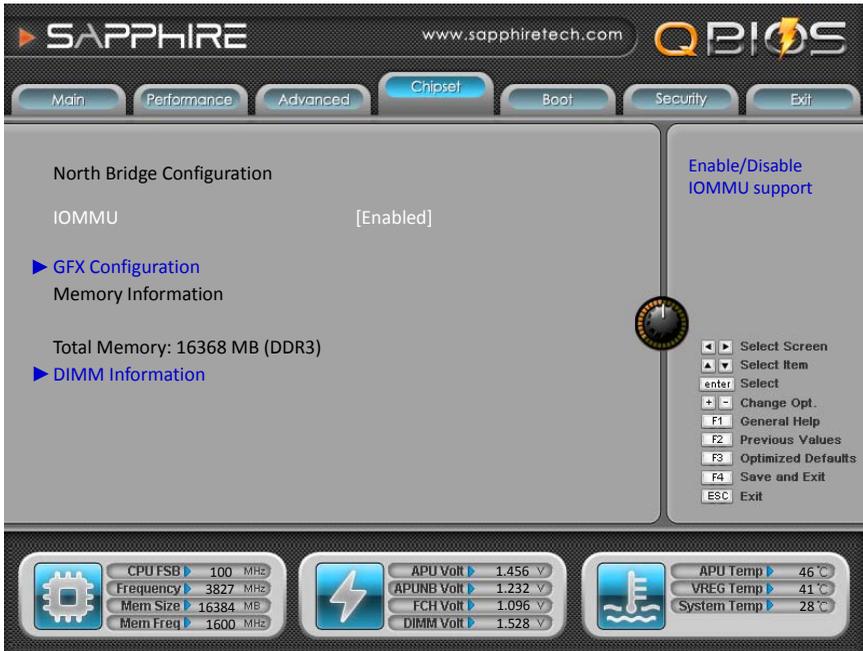
IOMMU

Enables or disable the IOMMU support.
Options: Enabled, Disabled.

▶ **GFX Configuration:**

Primary Video Device
Select Primary Video Device that BIOS will use to for output.
Options: IGD Video, NB PCIe slot video, SB PCIe slot video.

Integrated Graphics
Enables the Integrated Graphics controller.
Options: Auto, Disabled, Force.

UMA Frame buffer Size
This item will only appear when "Integrated Graphics" item is set to
"Force" option. It controls the amount of system memory that is
allocated to the integrated graphics processor.
Options: 32M, 64M, 128M, 256M, 512M.

PSPP Policy
Allows you to select PCIe speed power policy.
Options: Disabled, Performance, Balanced-High, Balanced-Low, Power Saving.

Dual-link DVI Card Support
Allows you to enable or disable the Dual-link DVI card support.
Options: Disabled, Enabled.

▶ **DIMM Information**

   Displays the CPU related information.

3-7 Boot Menu

The Boot menu is used to configure the boot settings and the boot priority.
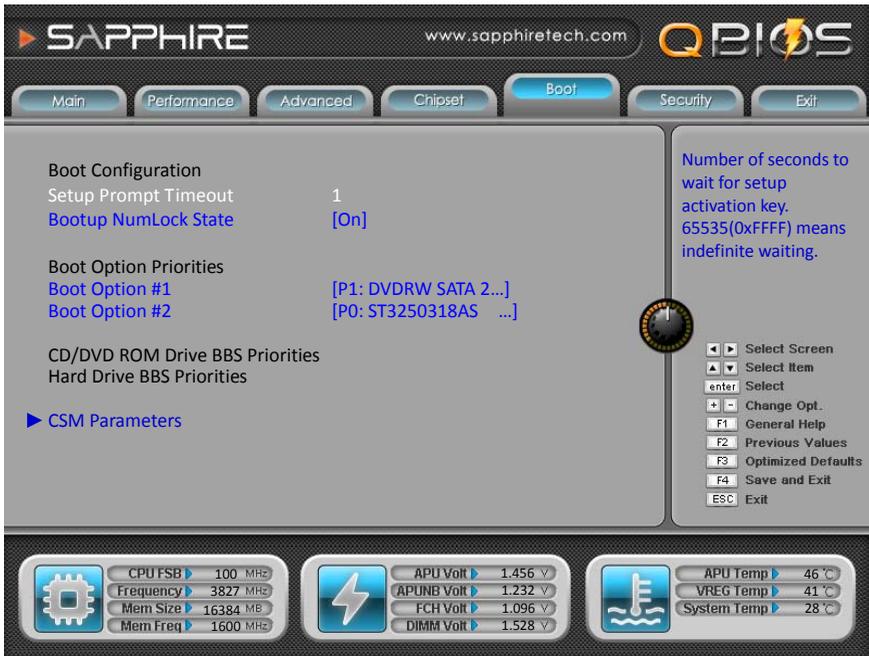
Setup Prompt Timeout
This is used to set an additional time the POST should wait for the operator to press the key to enter setup. The time is entered in seconds.

Bootup NumLock State
Selects the state of the keyboard's numlock function after POST.
Options: On, Off.

Boot Option Priorities
These options are used to form the boot order and are dynamically generated.

CD/DVD ROM Drive BBS Priorities
Allows configure the boot order for a specific CD/DVD ROM device class.

Hard Drive BBS Priorities
Allows configure the boot order for a specific Hard Drive device class.

▶ CSM Parameters

Launch CSM
This option controls if CSM will be launched.
Options: Auto, Always, Never.

Boot option filter
This option controls what devices system can boot to UEFI or Legacy.
Options: UEFI and Legacy, Legacy only, UEFI only.

Launch PXE OpROM policy
This option controls the execution of UEFI and Legacy PXE OpROM.
Options: Do not launch, Legacy only, UEFI only.

Launch Storage OpROM policy
This option controls the execution of UEFI and Legacy Storage OpROM.
Options: Do not launch, Legacy only, UEFI only.

Launch video OpROM policy
This option controls the execution of UEFI and Legacy video OpROM.
Options: Do not launch, Legacy only, UEFI only.

Other PCI device ROM priority
Options: For PCI devices other than Network, mass storage or video defines which OpROM to launch.
Options: UEFI OpROM, Legacy OpROM.

3-8 Security Menu

The Security menu allows you to change the system security settings.

Administrator Password

This function is used to set, change or delete the Administrator password. If there is already a password installed, the system asks for this first. To clear a password, simply enter nothing and acknowledge by pressing Return. To set a password, enter it twice and acknowledge by pressing Return. The password must be 3 to 20 characters long.

User Password

This function is used to set, change or delete the User password. If there is already a password installed, the system asks for this first. To clear a password, simply enter nothing and acknowledge by pressing Return. To set a password, enter it twice and acknowledge by pressing Return. The password must be 3 to 20 characters long.

3-9 Save & Exit Menu

The Save & Exit menu allows you to load the optimal default values for BIOS, and save or discard your changes to the BIOS items.
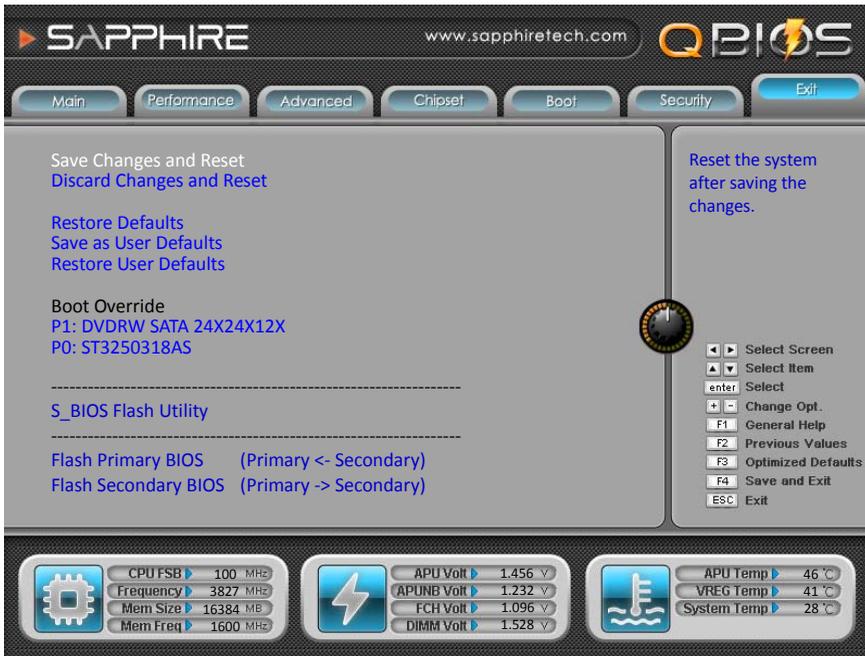
Save Changes and Reset
This resets system after saving the changes.

Discard Changes and Reset
This resets system without saving the changes.

Restore Defaults
The restore defaults are the factory settings of this motherboard.

Save as User Defaults
This is used to save all current settings as user default. The current setup state can later be restored using Restore User Defaults.

Restore User Defaults
This is used to restore all tokens to settings previously stored by Save as User Defaults.

Boot Override

This group of functions includes a list, each of them corresponding to one device within the boot order. Select a drive to immediately boot that device regardless of the current boot order.

S_BIOS Flash Utility

This utility allows you to update the system BIOS in embedded BIOS. Please refer to "4-4 S_BIOS Flash Utility" for details.

Flash Primary BIOS (Primary <- Secondary)

This item allows you to copy the Secondary BIOS to Primary BIOS.
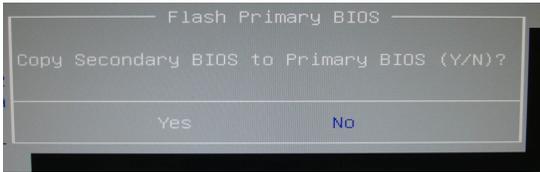
Flash Secondary BIOS (Primary -> Secondary)

This item allows you to copy the Secondary BIOS to Primary BIOS.
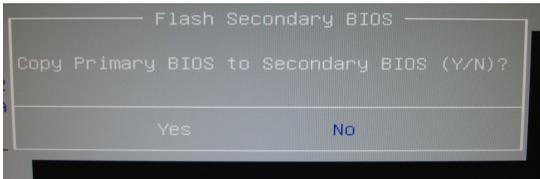
Chapter 4   Driver Installation

After the operating system has been installed, you need to install drivers for this mainboard.

The support DVD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

4-1 Driver Install

Insert the bundled driver DVD into your optical drive and the main menu will be displayed on your PC screen. Click each item button and select the item you want to install.

<Main Page>

The Mainboard Drivers item shows the available device drivers. Install the necessary drivers to use the devices.

<Mainboard Drivers page>

📌 Note: If Autorun function is not enabled in your computer, browse the contents of the support DVD to locate the file autorun.exe, and click this file to run the CD.

4-2 TRIXX Utility

TRIXX is a simple and easy-to-use utility that allows users to adjust system settings for overclocking in a Windows environment. The TRIXX utility includes three configurations for frequency, voltage and hardware monitoring.

To install TRIXX Utility, run it from the Sapphire Utility page from the bundled DVD. A TRIXX Utility shortcut will be created on the Desktop.

Display current CPU information

Adjust frequency for CPU.

Adjust voltage for CPU, DIMM etc.

Displays system hardware monitor status

Apply the chosen settings.
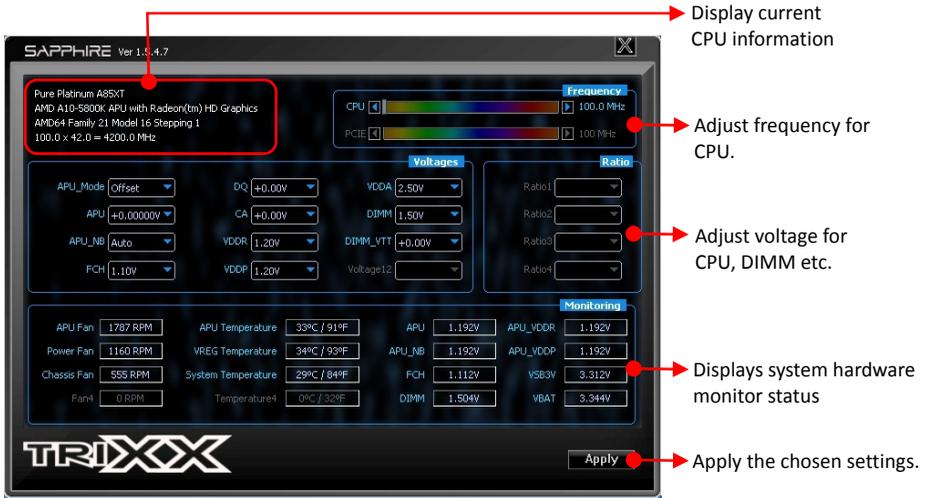
* Actual adjustment options will be different with the picture

4-3 Hardware monitor gadget

This Hardware monitor gadget directly appears in windows screen after TriXX installation is completed. It can be used to help keep track of temperatures of CPU, System and fan speed of CPU, System and voltages of CPU, System.
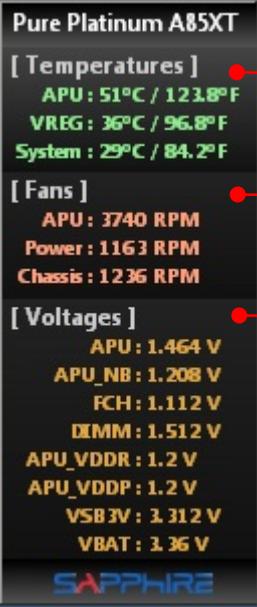
Pure Platinum A85XT

[Temperatures] → Displays hardware monitor temperature.
APU : 51°C / 123.8°F
VREG : 36°C / 96.8°F
System : 29°C / 84.2°F

[Fans] → Displays fan speeds.
APU : 3740 RPM
Power : 1163 RPM
Chassis : 1236 RPM

[Voltages] → Displays voltages of system.
APU : 1.464 V
APU_NB : 1.208 V
FCH : 1.112 V
DIMM : 1.512 V
APU_VDDR : 1.2 V
APU_VDDP : 1.2 V
VSB3V : 3.312 V
VBAT : 3.36 V

SAPPHIRE

4-4 S_BIOS Flash Utility

This mainboard provides a BIOS update tool. The S_BIOS allows you to update the system BIOS without having to enter MS-DOS or Windows environment. Embedded in the BIOS, the S_BIOS is simple and easy-to-use utility to flash BIOS.

Refer to the following steps for S_BIOS Flash.

Setp1:

Enter BIOS setup screen, select "S_BIOS Flash Utility" item from "Exit" tab.

Setp2:

The S-BIOS flash utility allows you to:

- Update BIOS form Drive (please refer to setp3)
- Save BIOS to Drive (please refer to setp6)

Setp3:
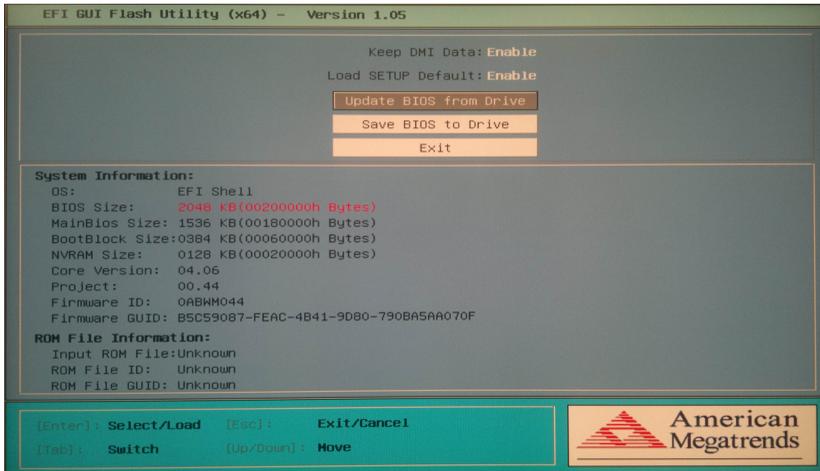
To Update BIOS form Drive, select the BIOS update file and press <OK> to start update. If the BIOS file stored in USB device, please must first insert USB device before turning on the system and **make sure the BIOS update file matches your mainboard model.**
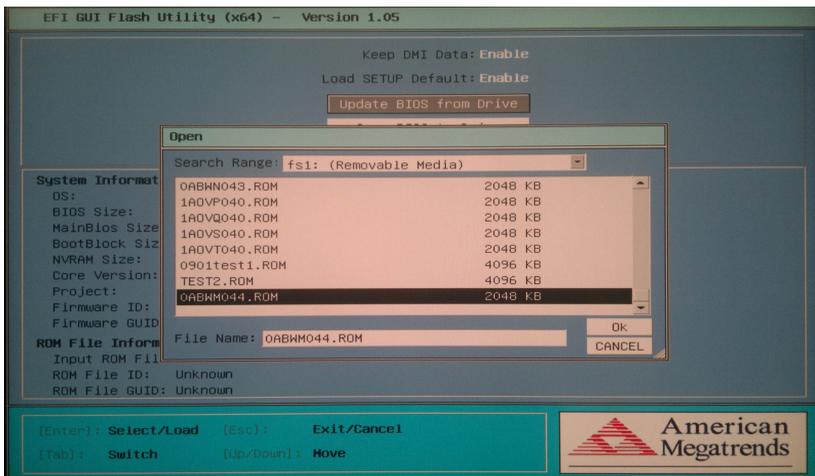
Setp4:

The update BIOS processing screen appears.
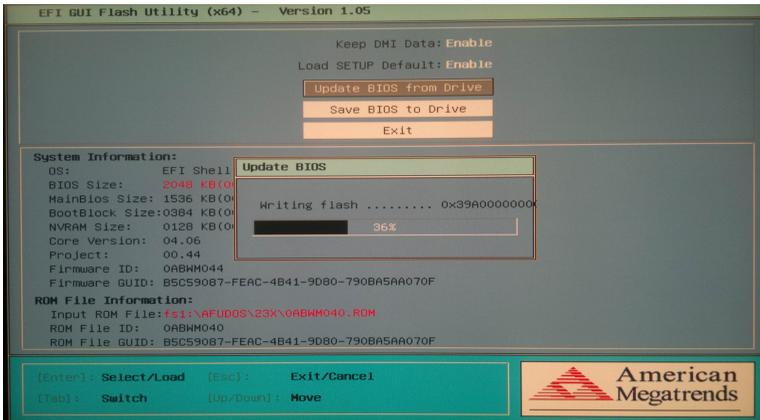
Setp5:

The BIOS update is completed. Please press any key to restart the system.
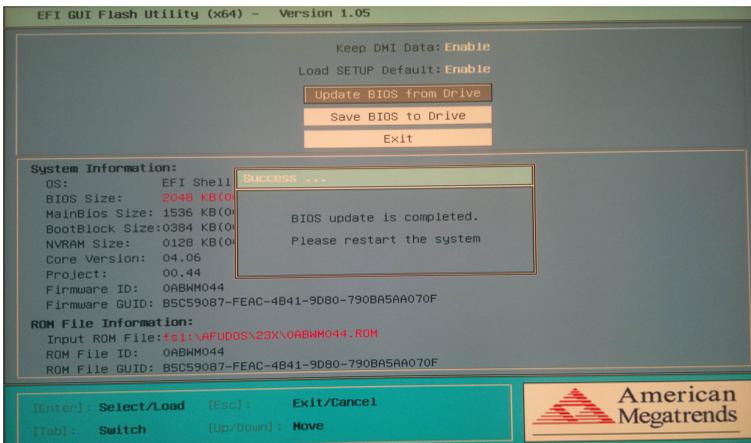
Setp6:

Save BIOS to Drive, allows you to save the current BIOS file.

If the BIOS file stored in USB device, please must first insert USB device before turning on the system.
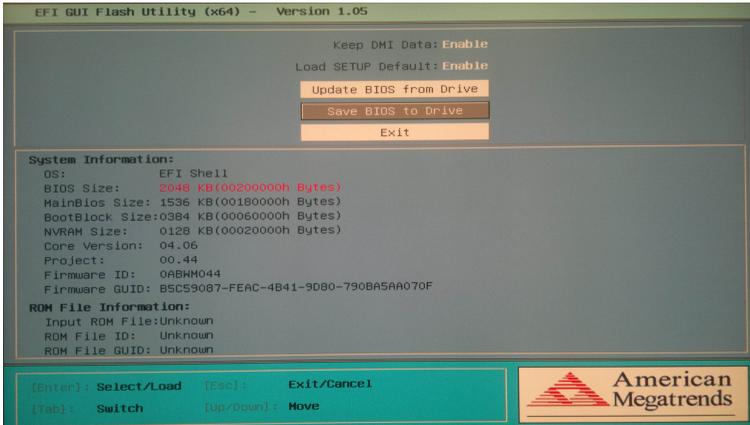
Setp7:

To Save BIOS to Drive, Select the stored location and press <OK> to start saving BIOS file.
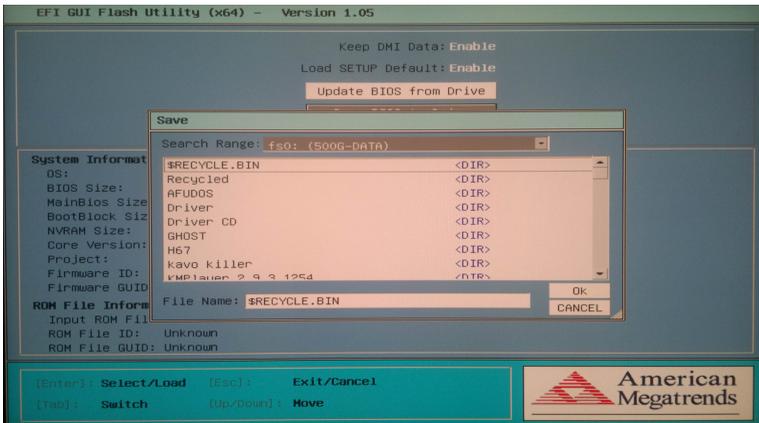
Setp8:

After saving BIOS file is completed. Select <Esc> to return "Exit" tab of BIOS setup.
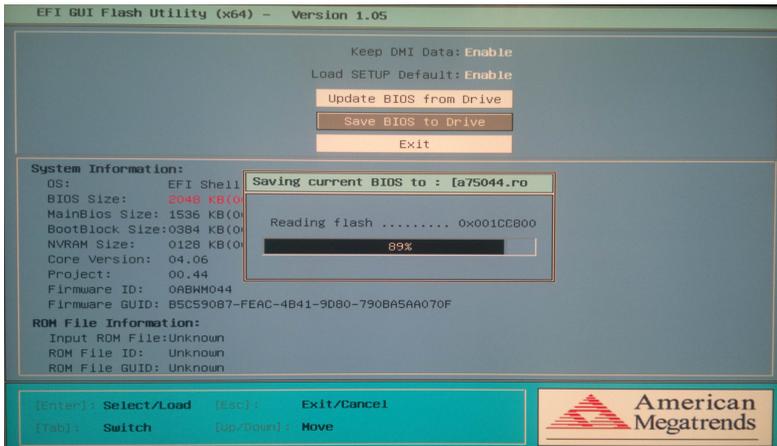
Chapter 5   POST Code

This chapter provides the Aptio POST Codes List for the mainboard during the BIOS pre-boot process.

The POST Codes are displayed on the Debug LED readout located directly onboard the mainboard.

Please refer to following "boot phases", which may apply to various status code & checkpoint descriptions:

♦ Security (SEC) – initial low-level initialization
♦ Pre-EFI Initialization (PEI) – memory initialization
♦ Driver Execution Environment (DXE) – main hardware initialization
♦ Boot Device Selection (BDS) – system setup, pre-OS user interface & selecting a bootable device (CD/DVD, HDD, USB, Network, Shell,..)

Checkpoint Ranges

Status Code Range	Description
01 – 0B	SEC execution
0C – 0F	SEC errors
10 – 2F	PEI execution up to and including memory detection
30 – 4F	PEI execution after memory detection
50 – 5F	PEI errors
60 – 8F	DXE execution up to BDS
90 – CF	BDS execution
D0 – DF	DXE errors
E0 – E8	S3 Resume (PEI)
E9 – EF	S3 Resume errors (PEI)
F0 – F8	Recovery (PEI)
F9 – FF	Recovery errors (PEI)

Standard Checkpoints

♦ **SEC Phase**

Status Code	Description
00	Not used
Progress Codes	
01	Power on. Reset type detection (soft/hard).
02	AP initialization before microcode loading
03	North Bridge initialization before microcode loading
04	South Bridge initialization before microcode loading

05	OEM initialization before microcode loading
06	Microcode loading
07	AP initialization after microcode loading
08	North Bridge initialization after microcode loading
09	South Bridge initialization after microcode loading
0A	OEM initialization after microcode loading
0B	Cache initialization
SEC Error Codes	
0C – 0D	Reserved for future AMI SEC error codes
0E	Microcode not found
0F	Microcode not loaded

⬥ PEI Phase

Status Code	Description
Progress Codes	
10	PEI Core is started
11	Pre-memory CPU initialization is started
12– 14	Pre-memory CPU initialization (CPU module specific)
15	Pre-memory North Bridge initialization is started
16	Pre-Memory North Bridge initialization (North Bridge module specific)
17	Pre-Memory North Bridge initialization (North Bridge module specific)
18	Pre-Memory North Bridge initialization (North Bridge module specific)
19	Pre-memory South Bridge initialization is started
1A	Pre-memory South Bridge initialization (South Bridge module specific)
1B	Pre-memory South Bridge initialization (South Bridge module specific)
1C	Pre-memory South Bridge initialization (South Bridge module specific)
1D – 2A	OEM pre-memory initialization codes
2B	Memory initialization. Serial Presence Detect (SPD) data reading
2C	Memory initialization. Memory presence detection
2D	Memory initialization. Programming memory timing information
2E	Memory initialization. Configuring memory
2F	Memory initialization (other).
30	Reserved for ASL (see ASL Status Codes section below)
31	Memory Installed
32	CPU post-memory initialization is started
33	CPU post-memory initialization. Cache initialization
34	CPU post-memory initialization. Application Processor(s) (AP) initialization
35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
36	CPU post-memory initialization. System Management Mode (SMM) initialization
37	Post-Memory North Bridge initialization is started
38	Post-Memory North Bridge initialization (North Bridge module specific)
39	Post-Memory North Bridge initialization (North Bridge module specific)
3A	Post-Memory North Bridge initialization (North Bridge module specific)
3B	Post-Memory South Bridge initialization is started

3C	Post-Memory South Bridge initialization (South Bridge module specific)
3D	Post-Memory South Bridge initialization (South Bridge module specific)
3E	Post-Memory South Bridge initialization (South Bridge module specific)
3F-4E	OEM post memory initialization codes
4F	DXE IPL is started
PEI Error Codes	
50	Memory initialization error. Invalid memory type or incompatible memory speed
51	Memory initialization error. SPD reading has failed
52	Memory initialization error. Invalid memory size or memory modules do not match.
53	Memory initialization error. No usable memory detected
54	Unspecified memory initialization error.
55	Memory not installed
56	Invalid CPU type or Speed
57	CPU mismatch
58	CPU self-test failed or possible CPU cache error
59	CPU micro-code is not found or micro-code update is failed
5A	Internal CPU error
5B	reset PPI is not available
5C-5F	Reserved for future AMI error codes
S3 Resume Progress Codes	
E0	S3 Resume is stared (S3 Resume PPI is called by the DXE IPL)
E1	S3 Boot Script execution
E2	Video repost
E3	OS S3 wake vector call
E4-E7	Reserved for future AMI progress codes
S3 Resume Error Codes	
E8	S3 Resume Failed
E9	S3 Resume PPI not Found
EA	S3 Resume Boot Script Error
EB	S3 OS Wake Error
EC-EF	Reserved for future AMI error codes
Recovery Progress Codes	
F0	Recovery condition triggered by firmware (Auto recovery)
F1	Recovery condition triggered by user (Forced recovery)
F2	Recovery process started
F3	Recovery firmware image is found
F4	Recovery firmware image is loaded
F5-F7	Reserved for future AMI progress codes
Recovery Error Codes	
F8	Recovery PPI is not available
F9	Recovery capsule is not found
FA	Invalid recovery capsule
FB – FF	Reserved for future AMI error codes

◆ DXE Phase

Status Code	Description
60	DXE Core is started
61	NVRAM initialization
62	Installation of the South Bridge Runtime Services
63	CPU DXE initialization is started
64	CPU DXE initialization (CPU module specific)
65	CPU DXE initialization (CPU module specific)
66	CPU DXE initialization (CPU module specific)
67	CPU DXE initialization (CPU module specific)
68	PCI host bridge initialization
69	North Bridge DXE initialization is started
6A	North Bridge DXE SMM initialization is started
6B	North Bridge DXE initialization (North Bridge module specific)
6C	North Bridge DXE initialization (North Bridge module specific)
6D	North Bridge DXE initialization (North Bridge module specific)
6E	North Bridge DXE initialization (North Bridge module specific)
6F	North Bridge DXE initialization (North Bridge module specific)
70	South Bridge DXE initialization is started
71	South Bridge DXE SMM initialization is started
72	South Bridge devices initialization
73	South Bridge DXE Initialization (South Bridge module specific)
74	South Bridge DXE Initialization (South Bridge module specific)
75	South Bridge DXE Initialization (South Bridge module specific)
76	South Bridge DXE Initialization (South Bridge module specific)
77	South Bridge DXE Initialization (South Bridge module specific)
78	ACPI module initialization
79	CSM initialization
7A – 7F	Reserved for future AMI DXE codes
80 – 8F	OEM DXE initialization codes
90	Boot Device Selection (BDS) phase is started
91	Driver connecting is started
92	PCI Bus initialization is started
93	PCI Bus Hot Plug Controller Initialization
94	PCI Bus Enumeration
95	PCI Bus Request Resources
96	PCI Bus Assign Resources
97	Console Output devices connect
98	Console input devices connect
99	Super IO Initialization
9A	USB initialization is started
9B	USB Reset
9C	USB Detect
9D	USB Enable
9E – 9F	Reserved for future AMI codes
A0	IDE initialization is started

A1	IDE Reset
A2	IDE Detect
A3	IDE Enable
A4	SCSI initialization is started
A5	SCSI Reset
A6	SCSI Detect
A7	SCSI Enable
A8	Setup Verifying Password
A9	Start of Setup
AA	Reserved for ASL (see ASL Status Codes section below)
AB	Setup Input Wait
AC	Reserved for ASL (see ASL Status Codes section below)
AD	Ready To Boot event
AE	Legacy Boot event
AF	Exit Boot Services event
B0	Runtime Set Virtual Address MAP Begin
B1	Runtime Set Virtual Address MAP End
B2	Legacy Option ROM Initialization
B3	System Reset
B4	USB hot plug
B5	PCI bus hot plug
B6	Clean-up of NVRAM
B7	Configuration Reset (reset of NVRAM settings)
B8 – BF	Reserved for future AMI codes
C0 – CF	OEM BDS initialization codes
DXE Error Codes	
D0	CPU initialization error
D1	North Bridge initialization error
D2	South Bridge initialization error
D3	Some of the Architectural Protocols are not available
D4	PCI resource allocation error. Out of Resources
D5	No Space for Legacy Option ROM
D6	No Console Output Devices are found
D7	No Console Input Devices are found
D8	Invalid password
D9	Error loading Boot Option (Load Image returned error)
DA	Boot Option is failed (Start Image returned error)
DB	Flash update is failed
DC	Reset protocol is not available