TECHNICAL MANUAL

Of

AMD Hudson M1 Chipset

Based

for AMD G-Series APU Mini-ITX M/B

NO.G03-NF35-F

Revision: 2.0

Release date: March, 2012

Trademark:

*** Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.**

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



TABLE OF CONTENT

ENVIRONMENTAL SAFETY INSTRUCTION iv
USER'S NOTICE v
MANUAL REVISION INFORMATION v
ITEM CHECKLIST v
CHAPTER 1 INTRODUCTION OF THE MOTHERBOARD
1-1 FEATURE OF MOTHERBOARD 1
1-2 SPECIFICATION 2
1-3 LAYOUT DIAGRAM 3
CHAPTER 2 HARDWARE INSTALLATION
2-1 JUMPER SETTING 7
2-2 CONNECTORS AND HEADERS 9
2-2-1 CONNECTORS 9
2-2-2 HEADERS 10
CHAPTER 3 INTRODUCING BIOS
3-1 ENTERING SETUP 15
3-2 BIOS MENU SCREEN 16
3-3 FUNCTION KEYS 17
3-4 GETTING HELP 17
3-5 MANU BAR 18
3-6 MAIN MENU 18
3-7 ADVANCED MENU 20
3-8 CHIPSET MENU 25
3-9 BOOT MENU 27
3-10 SECURITY MENU 28
3-11 SAVE & EXIT MENU 29



Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.

- 0 to 60 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)

- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.

- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.

- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

USER'S NOTICE

COPYRIGHT OF THIS MANUAL BELONGS TO THE MANUFACTURER. NO PART OF THIS MANUAL, INCLUDING THE PRODUCTS AND SOFTWARE DESCRIBED IN IT MAY BE REPRODUCED, TRANSMITTED OR TRANSLATED INTO ANY LANGUAGE IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION OF THE MANUFACTURER.

THIS MANUAL CONTAINS ALL INFORMATION REQUIRED TO USE THIS MOTHER-BOARD SERIES AND WE DO ASSURE THIS MANUAL MEETS USER'S REQUIREMENT BUT WILL CHANGE, CORRECT ANY TIME WITHOUT NOTICE. MANUFACTURER PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, AND WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTIAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMANGES FOR LOSS OF PROFIT, LOSS OF BUSINESS, LOSS OF USE OF DATA, INTERRUPTION OF BUSINESS AND THE LIKE).

PRODUCTS AND CORPORATE NAMES APPEARING IN THIS MANUAL MAY OR MAY NOT BE REGISTERED TRADEMARKS OR COPYRIGHTS OF THEIR RESPECTIVE COMPANIES, AND THEY ARE USED ONLY FOR IDENTIFICATION OR EXPLANATION AND TO THE OWNER'S BENEFIT, WITHOUT INTENT TO INFRINGE.

Manual Revision Information

Reversion	Revision History	Date
2.0	Second Edition	March 2, 2012

Item Checklist

- ☑ Motherboard
- ☑ User's Manual
- ☑ CD for motherboard utilities
- ☑ DVI-VGA Converter
- ☑ Cable(s)

Chapter 1
Introduction of the Motherboard

1-1 Feature of motherboard

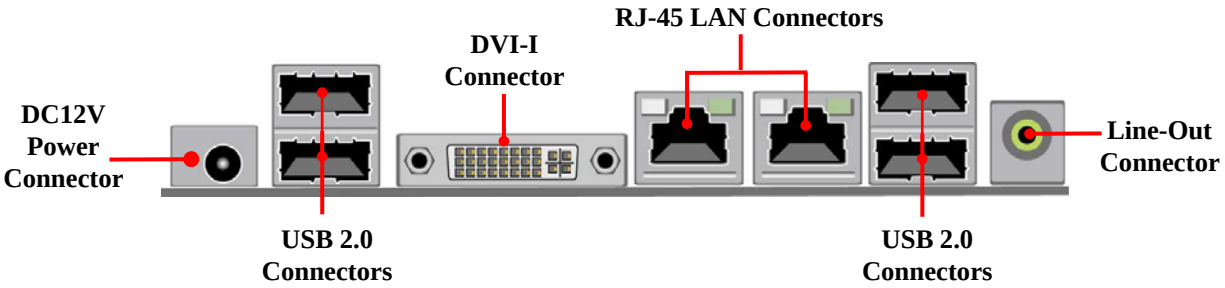
- AMD G-Series APU + Hudson M1 Chipset
- Onboard AMD eOntario (G-Series) Dual core APU, with low power consumption never denies high performance.
- Support DirectX 11 3D Graphics Acceleration
- Support 2 * Serial ATA3 (6Gb/s) Devices
- Support 64-bit SODIMM DDRIII 800/1066 Single Channel, up to 8GB
- Support CF card
- Onboard REALTEK RTL 8111EVL Gigabit Ethernet LAN chip.
- Integrated REALTEK ALC 662-GR 4-channel HD audio CODEC
- Support USB 2.0 data transport demands.
- Support RS232/422/485 and watchdog.
- Support CPU Smart FAN
- Compliance with ErP standard

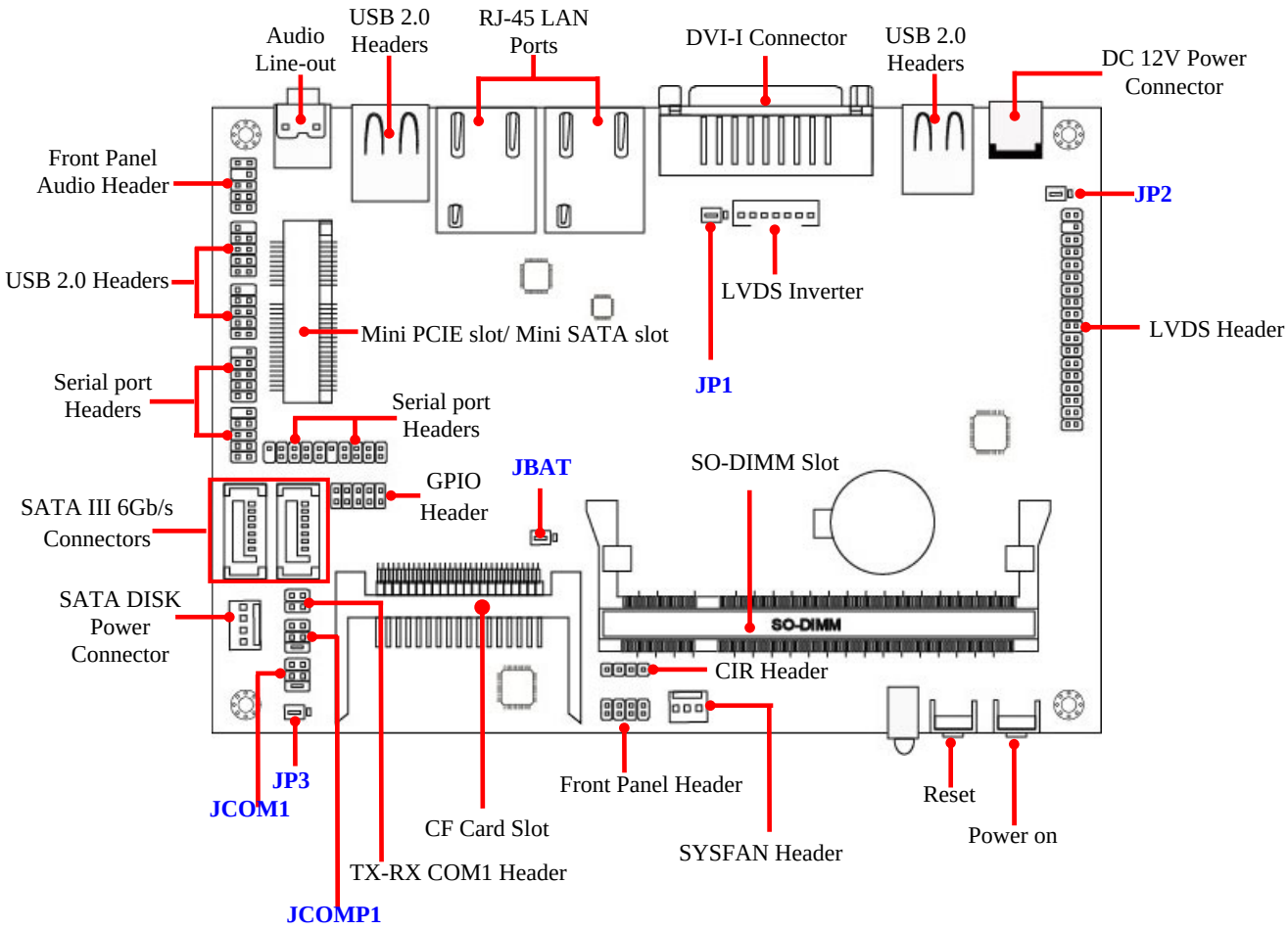
1-2 Specification

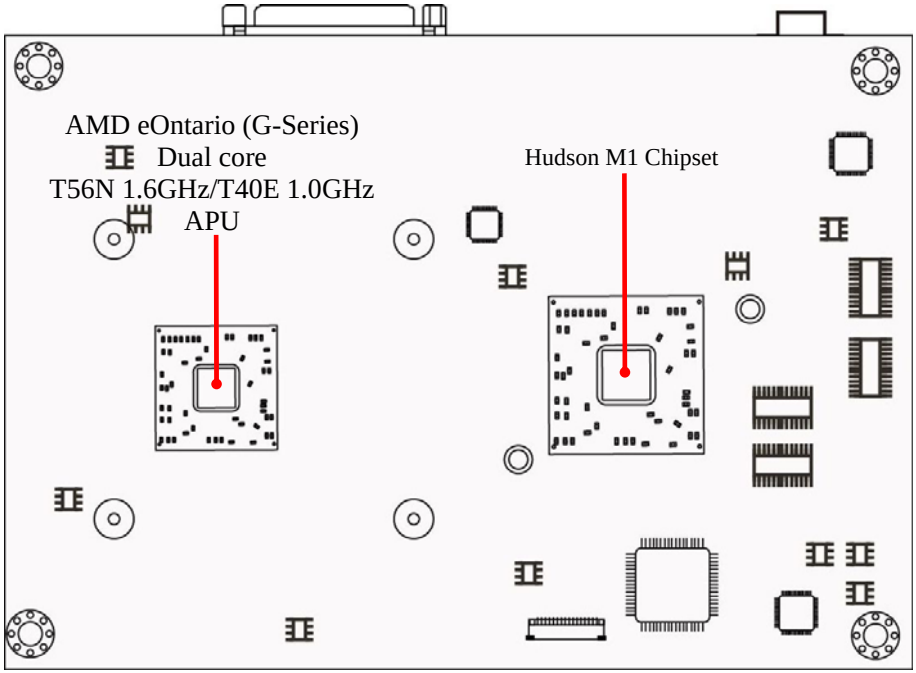
Spec	Description
Design	● 3.5”SBC 6 layers; PCB size: 14.8x 10.2 cm
Chipset	● Hudson M1 Chipset
Embedded CPU	● Support AMD eOntario (G-Series) Dual core T56N 1.6GHz / T40E 1.0GHz APU
Memory Slot	● 1 * 200-pin DDRIII SODIMM Slot for un-buffered Single Channel 64-bit DDRIII 800/1066 SDRAM ● Expandable to 8GB
Expansion Slots	● CF card slot x1 ● Mini-PCI E slot x1 (Optional) ● Mini-SATAIII slot x1(alternative with Mini PCI-E)
Integrate IDE	● One PCI IDE controller that supports PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA /100/66 functions that deliver the data transfer rate up to 100MB/s.
LAN	● Integrated Realtek RTL8111EVL PCI-E Gigabit LAN. ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
HD Audio	● Realtek ALC662-GR 4-channel HD Audio Codec integrated ● Audio driver and utility included
BIOS	● AMI 16MB Flash ROM
Multi I/O	● DVI-I connector x1 ● USB 2.0 port x 4 and USB 2.0 header x2 ● RJ-45 gigabit LAN connector x2 ● Audio Line out connector x1 ● SATAIII connector x2 ● Front panel header x1 ● RS422/485 header x2

	● LVDS connector x1 ● GPIO connector x1 ● SYSTEM FAN header x1

1-3 Layout Diagram




Audio Line-out
USB 2.0 Headers
RJ-45 LAN Ports
DVI-I Connector
USB 2.0 Headers
DC 12V Power Connector
Front Panel Audio Header
JP2
USB 2.0 Headers
LVDS Inverter
Mini PCIE slot/ Mini SATA slot
LVDS Header
JP1
Serial port Headers
Serial port Headers
JBAT
SO-DIMM Slot
GPIO Header
SATA III 6Gb/s Connectors
SO-DIMM
SATA DISK Power Connector
CIR Header
JP3
JCOM1
Front Panel Header
Reset
CF Card Slot
Power on
SYSFAN Header
TX-RX COM1 Header
JCOMP1



Jumper

Jumper	Name	Description
JBAT	CMOS RAM Clear Function Setting	3-pin Block
JCOM1	COM1 RS232/422/485 Function Select	6-pin Block
JCOMP1	COM1 RS232 Power Select	6-pin Block
JP1	Inverter VCC 12V/5V Select	3-pin Block
JP2	LVDS 5V/3.3V Select	3-pin Block
JP3	CF Card Master/Slave Mode Select	3-pin Block

Connectors

Connector	Name	Description
DC12V_IN	DC Power Connector	1-phone Jack
CN1/CN3	USB Port Connectors	4-pin Connectors
DVI1	DVI Port Connector	24-pin Connector
LAN1/LAN2	RJ-45 LAN Connector	8-pin Connector
HOUT1	Line Out Connector	1-phone Jack
SATA1/DATA2	Serial ATAII Connector	7-pin Connector
PWOUT1	Power Out Connector	4-pin Connector

Headers

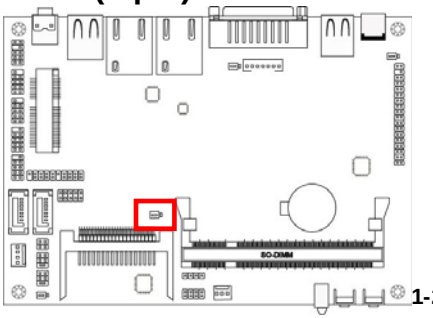
Header	Name	Description
AUDIO1	Front Panel Audio Header	9-pin block
COM1/COM2/ COM3/COM4	Serial port headers	9-pin block
TX-RXCOM1	RS422/485 header	4-pin block
USB1/USB2	USB header	9-pin block
JW_FP1	Front Panel Header (PWR LED/ HD LED/ /Power Button /Reset)	8-pin Block
CIR	CIR header	4-pin block
GPIO1	GPIO header	10-pin block
SYSFAN1	FAN Speed Headers	3-pin Block
INVERTER1	LVDS Inverter Connector	7-pin Block
LVDS1	LVDS Connector	36-pin Block

Chapter 2

Hardware Installation

2-1 Jumper Setting

(1) JBAT(3-pin): Clear CMOS



JBAT



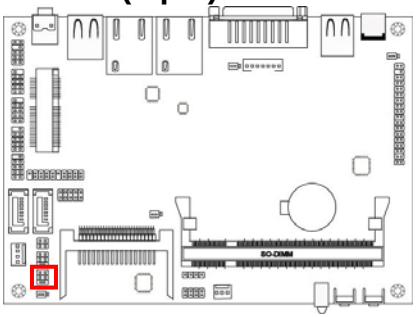
1-2 closed: Normal

JBAT



2-3 closed : Clear CMOS

(2) JCOM1(6-pin): COM1 Port RS232/422/485 function select



JCOM1



1-2 closed: RS232

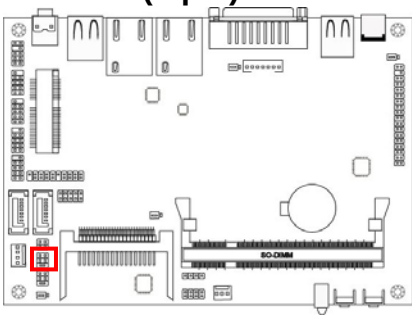


3-4 closed : RS485



5-6 closed : RS422

(3) JCOMP1(6-pin): COM1 PRS232 power select



JCOMP1



1-2 closed: RS232

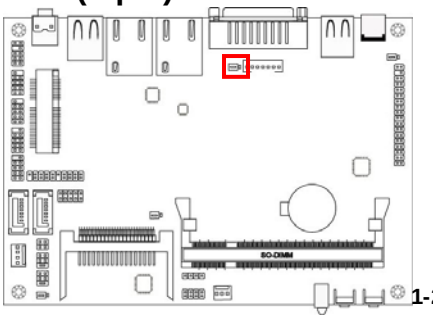


3-4 closed : +12V



5-6 closed :+5V

(4) JP1 (3-pin): Inverter VCC 5V/12V select



JP1



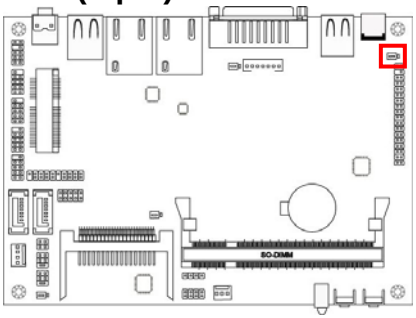
1-2 closed: Inverter 12V Select

JP1



2-3 closed : Inverter 5V Select

(5) JP2 (3-pin): LVDS 5V/3.3V select



JP2



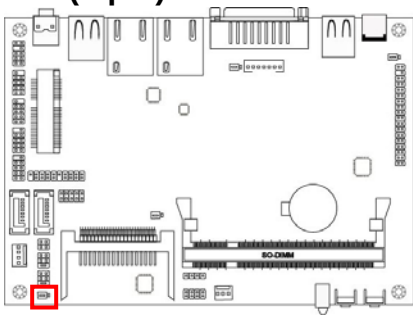
1-2 closed: LVDS VCC 5V

JP2



2-3 closed : LVDS VCC 3.3V

(6) JP3(3-pin): CF card Master /Slave Mode setting



JP3



1-2 closed: CF Card Slave Mode

JP3

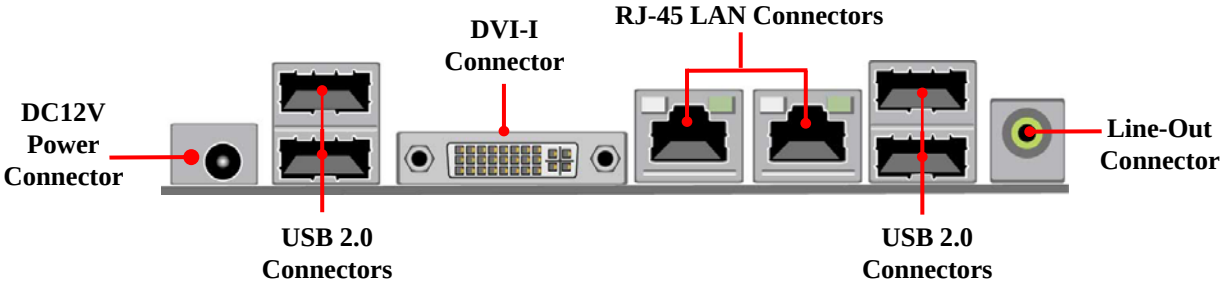


2-3 closed :CF card Master Mode

2-2 Connectors and Headers

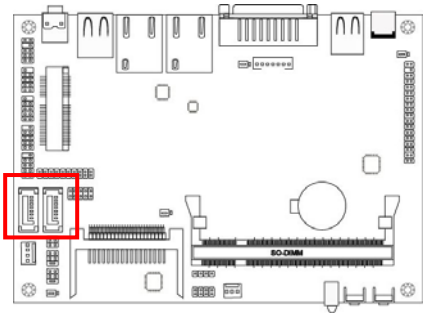
2-2-1 Connectors

(1) Rear Panel Connectors

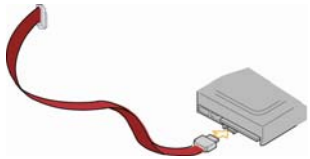


(2) Serial-ATA Port connector: SATA1/SATA2

These SATAIII connectors support SATA 6Gb/s specification. Please connect SATAIII device to the connector with SATAIII cable. One connector supports one SATA device.

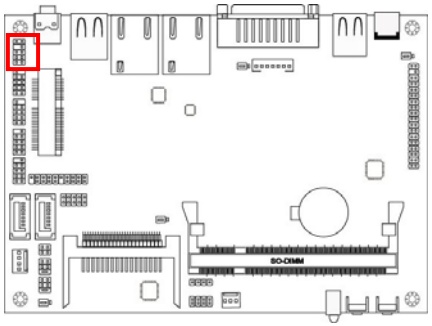


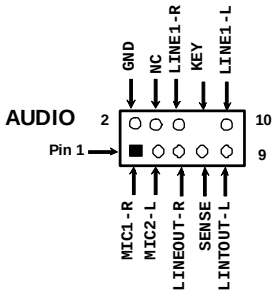
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



2-2-2 Headers

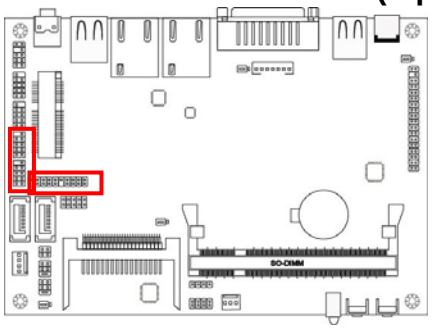
(1) Front panel audio (9-pin): AUDIO1

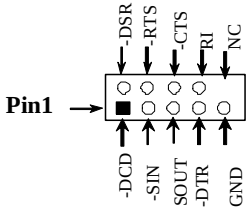




Line-Out, MIC Headers

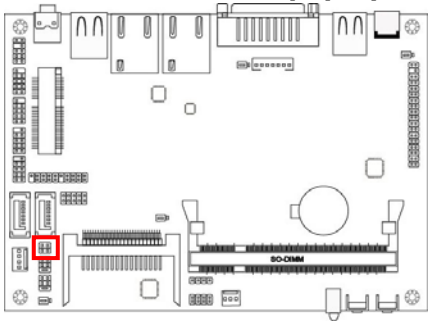
(2) Serial Port Connectors (9-pin): COM1/COM2/COM3/COM4

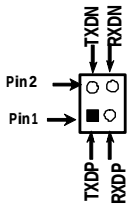




Serial Port 9-pin Block

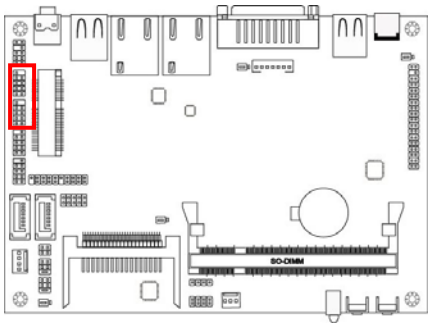
(3)TX-RXCOM Header (4-pin): TX-RXCOM1

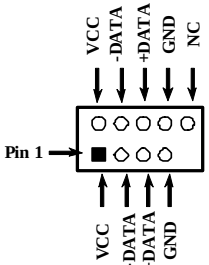




TX-RXCOM1 Header

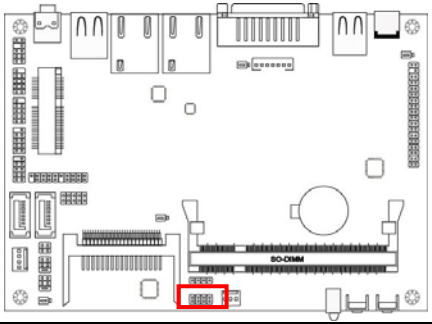
(4)USB Port Headers (9-pin): USB1/USB2

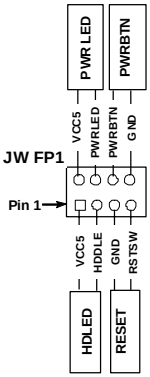




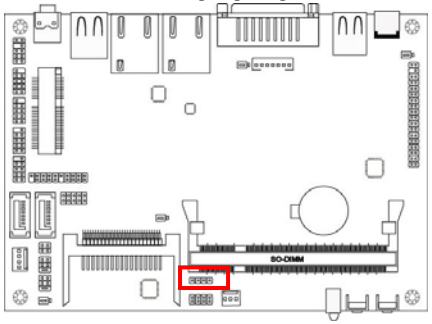
USB Port Header

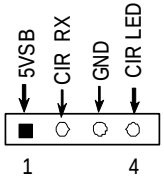
(5)Front Panel Header (8-pin): JW_FP1





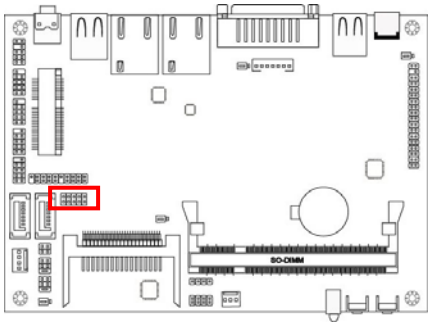
(6) CIR Header (4-pin): CIR

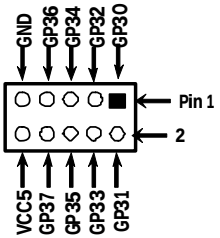




CIR Header

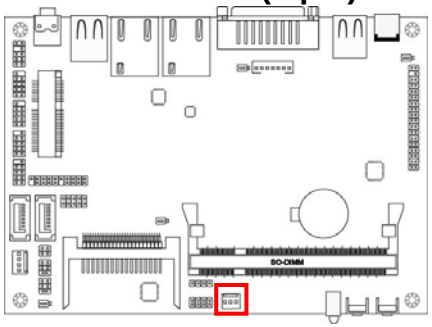
(7) GPIO Header (10-pin): GPIO1

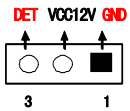




GPIO Header

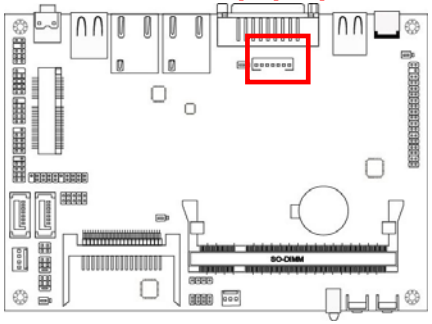
(8) SYSFAN Header (3-pin): SYSFAN1

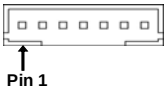




Fan Header

(9) LVDS Inverter (7-pin): INVERTER1

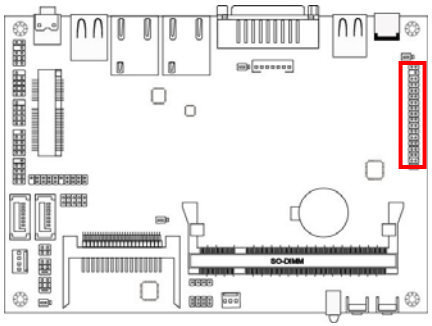


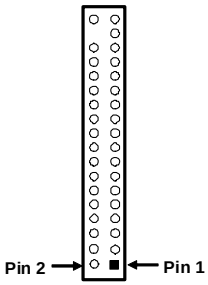


INVERTER

Pin No.	Definition
1	VCC
2	VCC
3	GND
4	GND
5	Backlight
6	GND
7	Brightness

(10)LVDS Header (36-pin): LVDS1





LVDS Header

Pin NO.	Pin Definition	Pin NO.	Pin Definition
Pin 1	LVDSB_DATAN3	Pin 2	LVDSB_DATAP3
Pin 3	LVDSB_CLKBN	Pin 4	LVDSB_DATABP
Pin 5	LVDSB_DATAN2	Pin 6	LVDSB_DATAP2
Pin 7	LVDSB_DATAN1	Pin 8	LVDSB_DATAP1
Pin 9	LVDSB_DATAN0	Pin 10	LVDSB_DATAP0
Pin 11	LVDS_DDC_DATA	Pin 12	LVDS_DDC_CLK
Pin 13	GND	Pin 14	GND
Pin 15	GND	Pin 16	GND
Pin 17	LVDSA_DATAP3	Pin 18	LVDSA_DATAN3
Pin 19	LVDS_CLKAP	Pin 20	LVDS_CLKAN
Pin 21	LVDSA_DATAP2	Pin 22	LVDSA_DATAN2
Pin 23	LVDSA_DATAP1	Pin 24	LVDSA_DATAN1
Pin 25	LVDSA_DATAP0	Pin 26	LVDSA_DATAN0
Pin 27	PVDD	Pin 28	PVDD
Pin 29	PVDD	Pin 30	PVDD
Pin 31	GND	Pin 32	GND
Pin 33	+5V	Pin 34	N/A
Pin 35	+12V (Reserved)	Pin 36	+3V

Chapter 3
Introducing BIOS

Notice!	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and 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 form our official website.

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

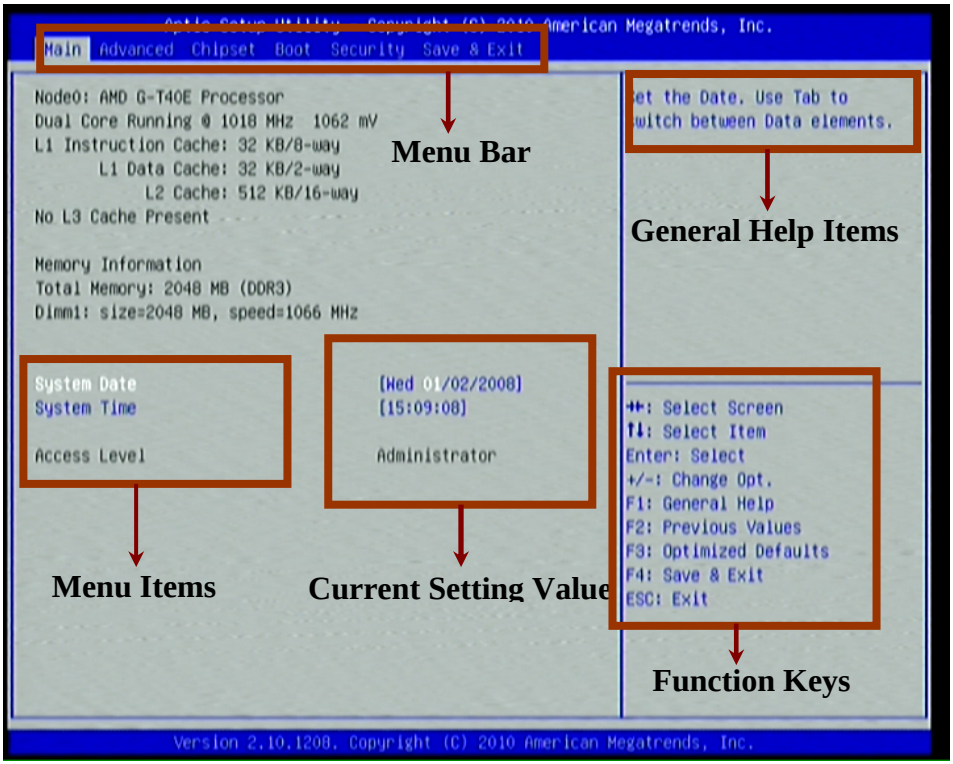
3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press <Del> to enter Setup

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



BIOS Menu Screen

3-3 Function Key

In the above BIOS Setup main menu, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press←→ (left, right) to select screen;
- Press ↑↓ (up, down) to choose the item you want to confirm or to modify in the main menu.
- Press <Enter> to select.
- Press <+>/<–> key when you want to modify the BIOS parameters for the active option.
- [F1]: Press to general help information.
- [F2]: Press to load previous value.
- [F3]: Press to load optimized defaults.
- [F4]: Save and Exit.
- Press <Esc> to quit the BIOS Setup.

3-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press [F1] to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-5 Menu Bar

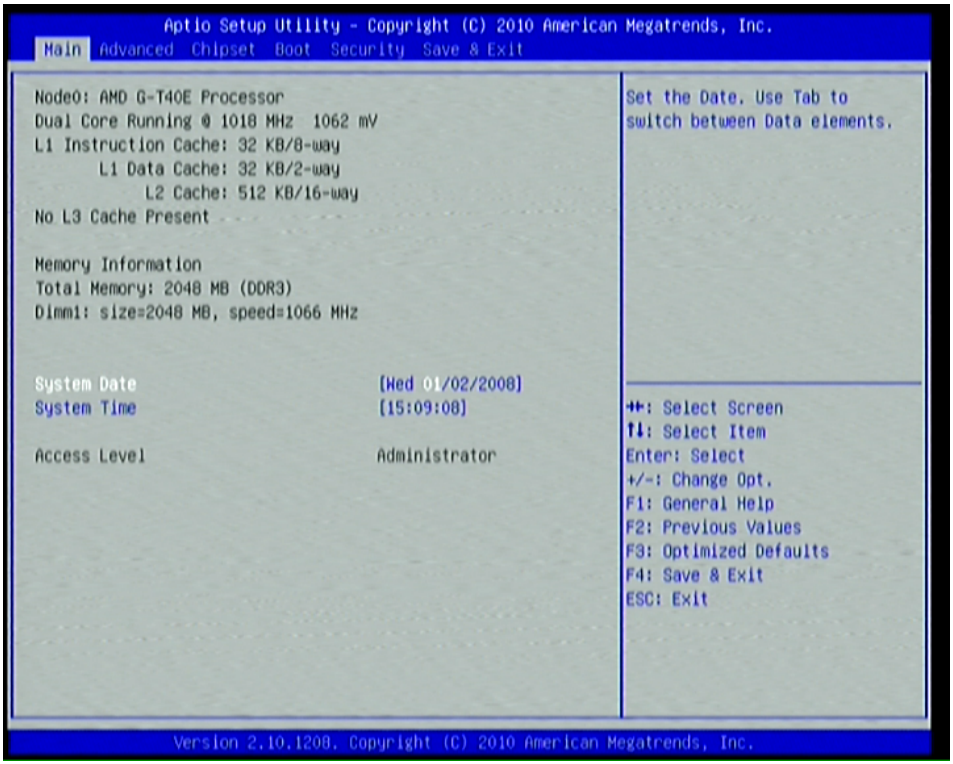
There are six menu bars on top of BIOS screen:

Main	To change system basic configuration
Advanced	To change system advanced configuration
Chipset	To change chipset configuration
Boot	To change boot settings
Security	Password settings
Save & Exit	Save setting, loading and exit options.

User can press the ←/→ (left, right) arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

3-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> / <-> key or numerical keyboard keys to select the value you want in each item.



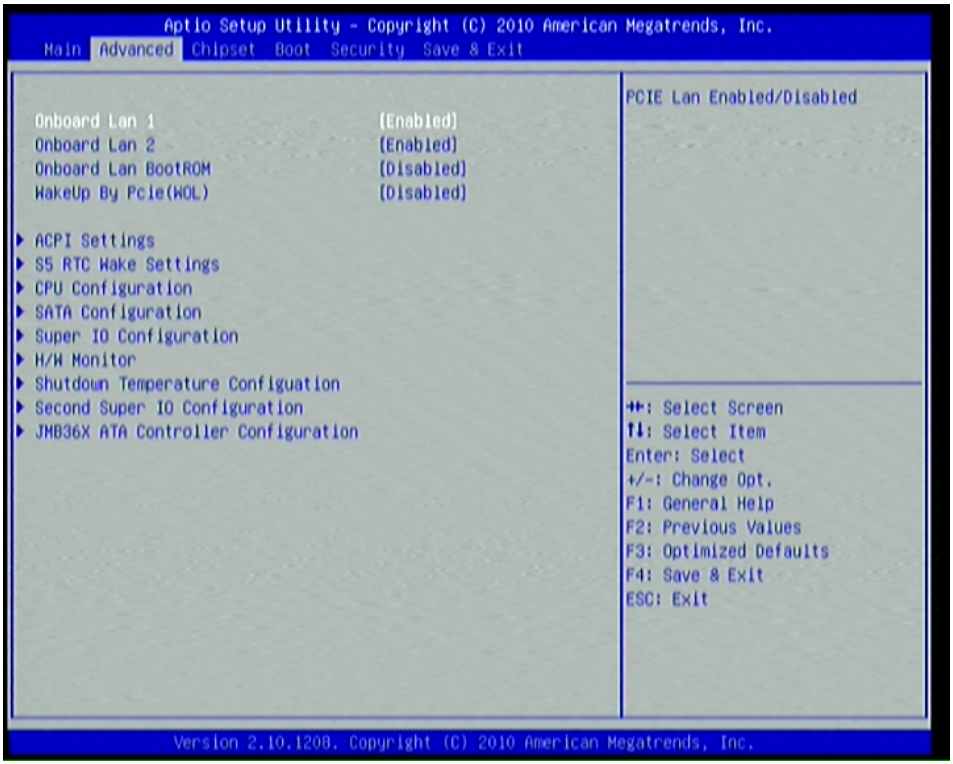
System Date

Set the date. Please use [TAB]to switch between data elements.

System Time

Set the time. Please use[TAB] to switch between time elements.

3-7 Advanced Menu



Onboard Lan 1/Onboard Lan 2

Use the above items to enable or disable onboard LAN 1/2.

Onboard Lan BootROM

Use this item to enable or disable boot option for legacy network devices.

Wake Up By Pcie(WOL)

Use this item to enable or disable system to wake up by PCIE LAN (WOL) function.

ACPI Settings

Enable ACPI Auto Configuration

Use this item to enable or disable BIOS ACPI auto configuration.

Enable Hibernation

Use this item to enable or disable system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State

Use this item to select the highest ACPI sleep state the system will enter when the suspend button is pressed. The optional settings are: [Suspend Disabled]; S3 (Suspend to RAM).

S5 RTC Wake Settings

This item will enable system to wake up from S5 using RTC alarm.

Press [Enter] to go into sub-item:

Wake System with Fixed Time.

The optional settings are: [Enabled]; [Disabled]. When set as Enabled, system will wake on the hour/minute/second specified. Please follow onscreen instructions.

CPU Configuration

PSTATE Adjustment

This item is provided to adjust startup P-state level.

PPC Adjustment

This item is provided to adjust _PPC object.

SVM Mode

Use this item to enable or disable CPU SVM virtualization. The optional settings are: [Disabled]; [Enabled].

C6 Mode

The optional settings are: [Disabled]; [Enabled].

SATA Configuration

Press [Enter] to make specified settings for available SATA device.

Super IO Configuration

Serial Port 1 Configuration

Press [Enter] and set parameter of the following sub-items for serial port1:

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

RS232 or RS 485 Select

Use this item to select RS 232 or RS 485 for serial port.

Serial Port 2 Configuration

Press [Enter] and set parameter of the following sub-items for serial port2:

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

Device Mode

The optional settings are: [Standard Serial Port Mode]; [IrDA function, active pulse is 1.6 us]; [IrDA function, active pulse is 3/16 bit time].

ERP Support

Use this item to enable or disable ERP function.

Power on after Power Fail

The optional settings are: [Former-Sts]; [Power On]; [Power Off].

WatchDog Function

Use this item to enable or disable Watchdog Timer Control. When set as Enabled, the following sub-items shall appear:

WatchDog Timer Unit

The optional settings are: [Sec];[Min].

WatchDog Timer Value

User can set a value in the range of 5 to 255.

H/W Monitor

Press [Enter] to view hardware health status. User can also make settings to the smart fan mode.

SYSFAN1 Smart Mode

When set as [Enabled], the following sub-items shall appear:

SYSFAN1 Highest Speed Temp/ Idle Temp/ Second Speed Setting/Idle Setting

Make settings to the above sub-items by typing in number in the specified range to control working temperature of the board.

Shutdown Temperature Configuration

Use this item to select system shutdown temperature.

The optional settings are: [Disabled]; [60C/140F]; [65C/149F]; [70C/158F]; [75C/167F], [80C/176F]; [85C/185F].

Second Super IO Configuration

Press [Enter] to set parameters for system super IO chip.

Serial Port 3 Configuration

Press [Enter] and set parameter of the following sub-items for serial port3:

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

Device Mode

The optional settings are: [Standard Serial Port Function Mode]; [IR Mode, Pulse 1.6 us, Full Duplex]; [IR Mode, Pulse 1.6 us, Half Duplex]; [IR Mode, Pulse 3/16 Bit Time, Full Duplex, [IR Mode, Pulse 3/16 Bit Time, Half Duplex].

Serial Port 4 Configuration

Press [Enter] and set parameter of the following sub-items for serial port4:

Serial Port

Use this item to enable or disable serial port (COM).

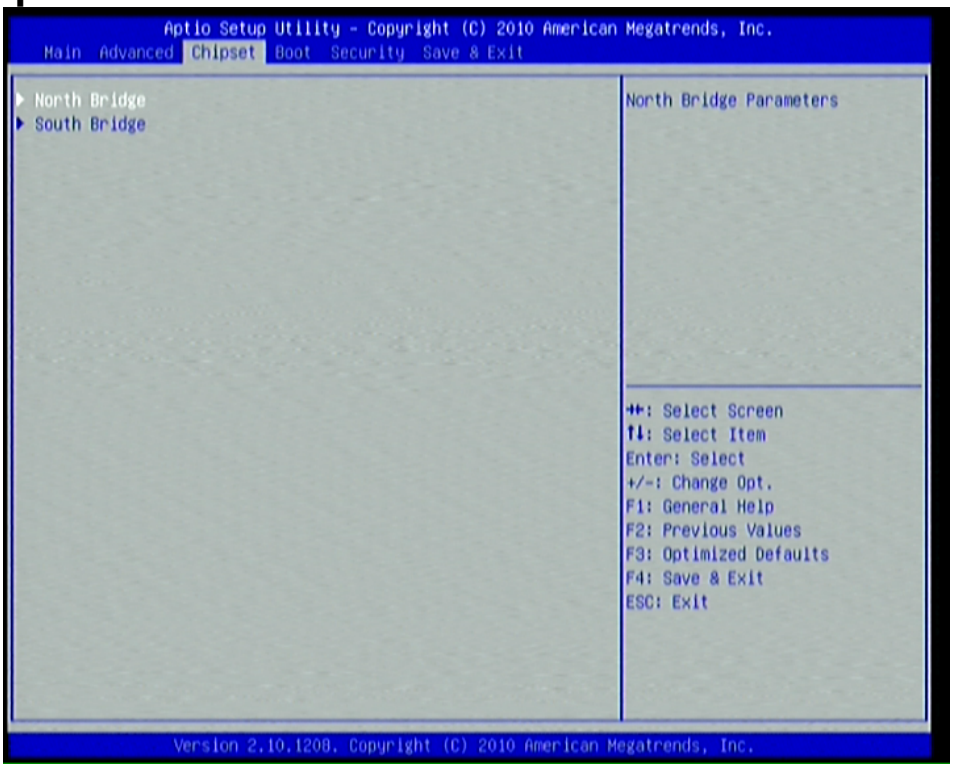
Change Settings

Use this item to select an optimal setting for super IO device.

JM36X ATA Controller Configuration

Press [Enter] to enter and make settings for PATA Primary Master; PATA Primary Slave; ATA Controller.

3-8 Chipset Menu



North Bridge

LVDS Mode

Use this item to enable or disable LVDS mode.

LVDS Panel Select

Use this item to select configuration for NON-EDID LVDS panel.

HDMI Audio

Use this item to enable or disable HDMI audio function.

IOMMU Mode

IOMMU is supported on Linux based systems to convert 32 bit I/O to 64 bit MMIO.

Memory Clock

This option allows user to select different memory clock.

Integrated Graphics

Use this item to enable integrated graphics controller. The optional settings are: [Auto]; [Disabled]; [Force].

Memory Timing

Press [Enter] to set memory timing parameters.

South Bridge

OnChip SATA Channel

The optional settings are: [Enabled]; [Disabled].

OnChip SATA Type

Use this item to select onchip SATA type.

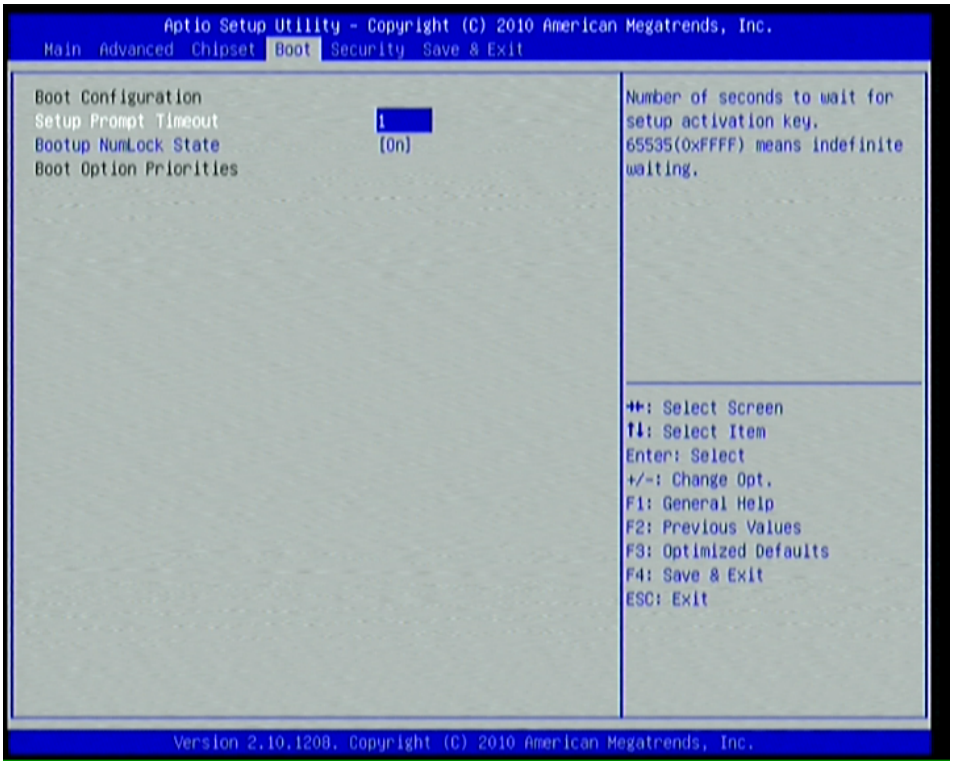
Onboard Audio Device

The optional settings are: [Enabled]; [Disabled].

SB USB Configuration

Press [Enter] to further setting USB port configuration.

3-9 Boot Menu



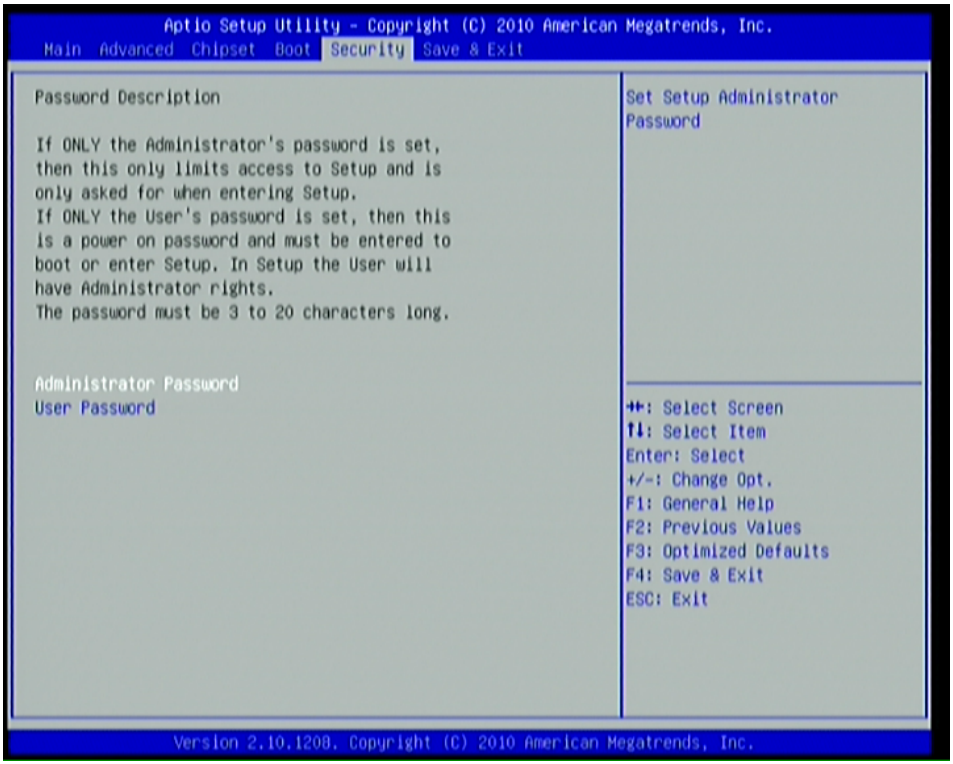
Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

Bootup Numlock State

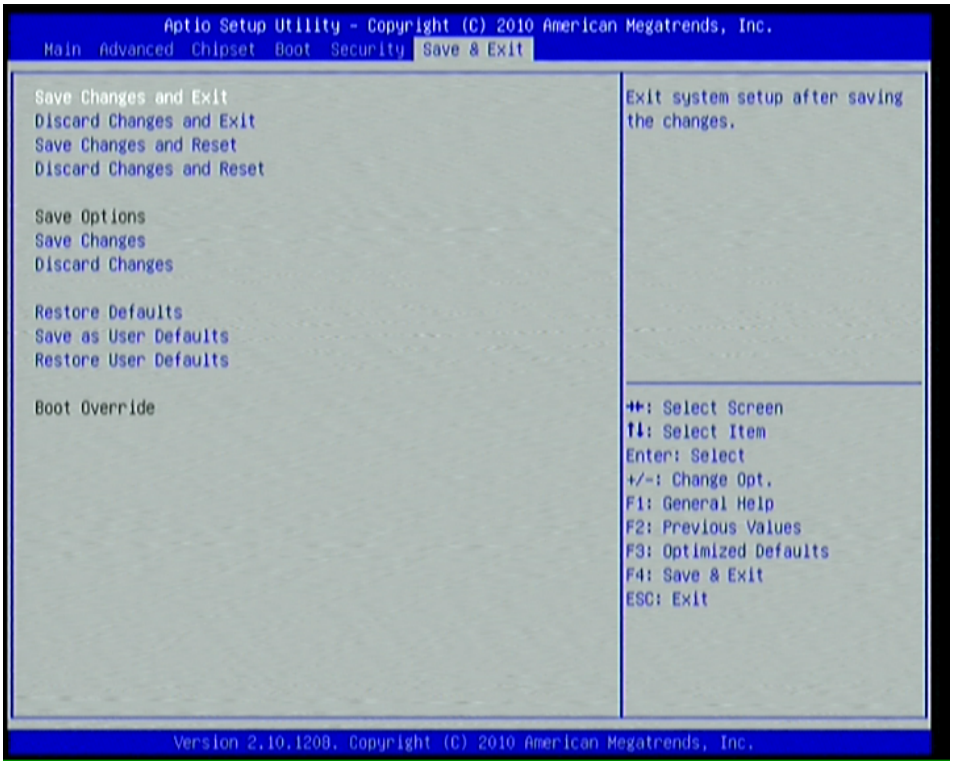
Use this item to select keyboard NumLock state. The optional settings are: [On]; [Off].

3-10 Security Menu



Security menu allow users to change administrator password and user password settings.

3-11 Save & Exit Menu



'Save & Exit' menu allows user to load optimal defaults, save or discard your changes to BIOS items.