User's Manual

MB-64010 & PL-64010

Embedded Gaming Board with AMD G-Series Processors, VGA, DVI-I, GbE, 4 COM, NVRAM and TPM

Note: MB- designates a board-level product

Manual Edition 1.0, September, 2012

The content of this document is intended to be accurate and reliable; the original manufacturer assumes no responsibility for any inaccuracies that may be contained in this manual. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without prior notice.

Trademarks

IBM, EGA, VGA, XT/AT, OS/2 and PS/2 are registered trademarks of International business Machine Corporation

Award is a trademark of Award Software International, Inc

Intel is a trademark of Intel

RTL is a trademark of Realtek

VIA is a trademark of VIA Technologies, Inc

Microsoft, Windows, Windows NT and MS-DOS are either trademarks or registered trademarks of Microsoft Corporation

All other product names mentioned herein are used for identification purpose only and may be trademarks and/or registered trademarks of their respective companies

Limitation of Liability

While reasonable efforts have been made to ensure the accuracy of this document, the manufacturer and distributor assume no liability resulting from errors or omissions in this document, or from the use of the information contained herein.

For more information on MB-64010 (board-level product of PL-64010) or other WIN products, please visit our website

www.win-ent.com.

For technical supports or free catalog, please send your inquiry to:

sales@win-ent.com.

Revision History

Rev.1.0	Original copy
Rev1.1	Wording correction.
Rev1.2	Include Jumper setting, JP11, JP12, JP13
Rev1.3	OS support update
Rev.1.4	Display support setup

Table of Contents

Chapter 1. General Information

1.1 Introduction

MB-64010, an All-In-One Gaming System / Board with the powerful AMD Fusion computing and graphics capabilities, VGA + DVI-I display interfaces, complete COMs, NVRAM, Gaming I/Os, security options, on-board audio power amplifier… and more, offers the best cost/performance you can find in the embedded computing market. The device supports both Linux and Windows Embedded Compact 7 low cost operating systems to optimize your systems return on investment. A fanless system design that accommodates selected AMD T16R or T40R low power APUs (optional) to provide you with high system reliability. The easy pluggable 72-pin golden finger connection is best suited for gaming kits and machines in the 'refurbish' market.

1.2 Specifications

■ System	
CPU	AMD® T52R Single Core 1.5GHz
BIOS	AMI® BIOS
Chipset	AMD® A50M chipset
System Memory	1 x DDR3-1066/1333* SODIMM socket support up to 4GB * T52R SKU support DDR3-1333 memory
Watchdog Timer	255 levels timer interval, (1sec. to 255min.), setup by software
■ Display	
Video Chipset	AMD® T52R w/ ATI® Radeon™ HD6310 - Microsoft® DirectX® 11 - OpenGL 4.0 - OpenCL 1.0 - UVD (Universal Video Decoder) 3.0; Full bitstream decoding of H.264/MPEG-4 AVC, VC-1, DivX, Xvid, MPEG2, as well as Blu-ray 3D
Video Interface	T52R SKU: 2560 x 1600 resolution is supported on dual monitors 1 x DVI-I 1 x VGA
■ Audio	
Audio Chipset	HDA

Power amp.	6W Stereo power amp.
Audio Interface	2x amplified speaker out through golden finger
■ Ethernet	
Ethernet Interface	One Gigabit Ethernet
■ Storage	
SSD	1 x CF socket Or 2GB NANDrive (PATA interface) (optional)
HDD	Two SATA connectors
■ Security	
Physical Security	Onboard Storage (optional)
Software Security	TPM 1.2 (optional) FPGA A3P125-FG144
■ Gaming	
NVRAM	On-board battery-less backup MRAM 32KB or optional 512KB MRAM
Timers	Programmable timer with timeout interrupt
Digital I/O	31 x ESD Protected Input 26 x current sink output (ULN2803)
■ Expansion	
Expansion slot	PCI-E x4 (PCI-E x16 slot)
■ System I/O	
COM	4 x COM • COM1 support Full RS-232 (external DB9) • COM2 support simple RS-232/ RS-485 (external DB9) • COM3 support simple RS-232 (internal pin header) or cctalk (jumper select) • COM4 support simple RS-232 (internal pin header)
USB	6 x USB2.0 - 2 x USB 2.0 port at rear I/O - 4 x USB 2.0 (pin header)
■ Power Supply	
Voltage	DC 5V & DC12V input from 20-pin Golden finger
■ Software	
O/S	Microsoft ® Windows ® WES7 / WEC7 and Linux Ubuntu 10/11 support
■ Mechanical and Environment	
Environmental	Operating Temperature: 0 – 60 ºC (32 ºF – 140 ºF) Storage Temperature: -20 – 85 ºC (-4 ºF – 185 ºF) Relative Humidity: 10-85 % RH, non-condensing

Compliance	FCC/CE Class A
Dimensions (Board)	170mm (L) x 200mm (W) (8.7" L x 11.6" W)
■ Applications	
Main Application	Video slot machines Fruit machines Video lottery terminals Amusement game machines Betting terminal of multiplayer table game or roulette

1.3 Ordering Information

MB-6401A	AMD® T52R Single Core 1.5GHz based Gaming Board with VGA, DVI-I, 1x GbE, 4x COM, USB, SATA, CF, 32KB MVRAM, PCIe slot
MB-6401B	AMD® T52R Single Core 1.5GHz based Gaming Board with VGA, DVI-D, 1x GbE, 4x COM, USB, SATA, CF, 32KB MVRAM, PCIe slot
Optional	
DK-GA1210-01	Development Kit R217AA Gaming I/O testing board CB-G00027-00 72 pin golden finger cable of MB-64010 (for CN13) CB-JAM002-00 20 pin golden finger power cable of MB-64010 (for CN20) CB-IUSB01-00 Dual port USB cable (for CN7, CN8) CB-SATA07-00 SATA cable (for CN15, CN16) CB-IPOW65-00 4 pin SATA Power cable (for CN17) CB-POW002-00 GF to ATX power cable w/ fool-proof

* Note: All specifications subject to change without prior notice

1.4 Packaging

Please make sure that the following items have been included in the package before installation.

1. MB-64010 board
2. Quick Installation Guide (Optional)
3. Cables (Optional)
4. CD-ROM that contains the following folders:
   (1) Manual
   (2) Driver

If any item of above is missing or damaged, please contact your dealer or retailer from whom you purchased the MB-64010. Keep the box and carton when you probably ship or store MB-64010 in near future. After you unpack the goods, inspect and make sure the packaging is intact. Do not plug the power adapter to the appliance of MB-64010 if you already find it appears damaged.

Note: Keep the MB-64010 in the original packaging until you start installation.

1.5 Precautions

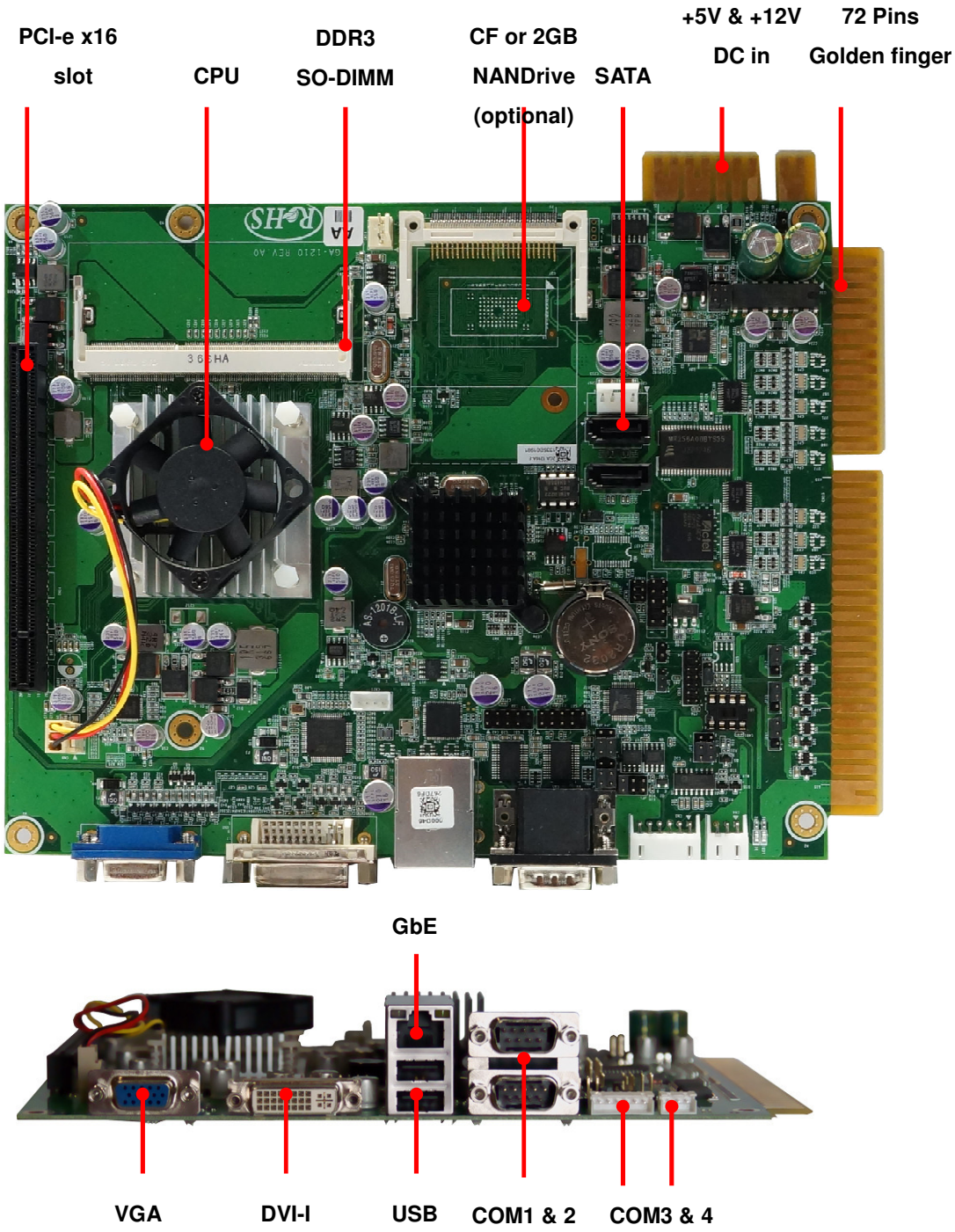
Please make sure you properly ground yourself before handling the MB-64010 board or other system components. Electrostatic discharge can be easily damage the MB-64010 board.

Do not remove the anti-static packing until you are ready to install the MB-64010 board.

Ground yourself before removing any system component from its protective anti-static packaging. To ground yourself, grasp the expansion slot covers or other unpainted parts of the computer chassis.

Handle the MB-64010 board by its edges and avoid touching the components on it.

1.6 Board Placement



Display Combination Support

There are two display interfaces that exist on the board. One is VGA, the other one is DVI-I. Through the BIOS settings the MB-64010 board supports the following display outputs.

BIOS Setting / Display Output	IGD (CRT+CRT)	IGD (CRT+DVI)
VGA	Not support	**Yes**
DVI	Not support	**Yes**
VGA(DVI-I)	**Yes**	Not support
VGA+VGA(DVI-I)	**Yes**	Not support
VGA+DVI-D	Not support	**Yes**

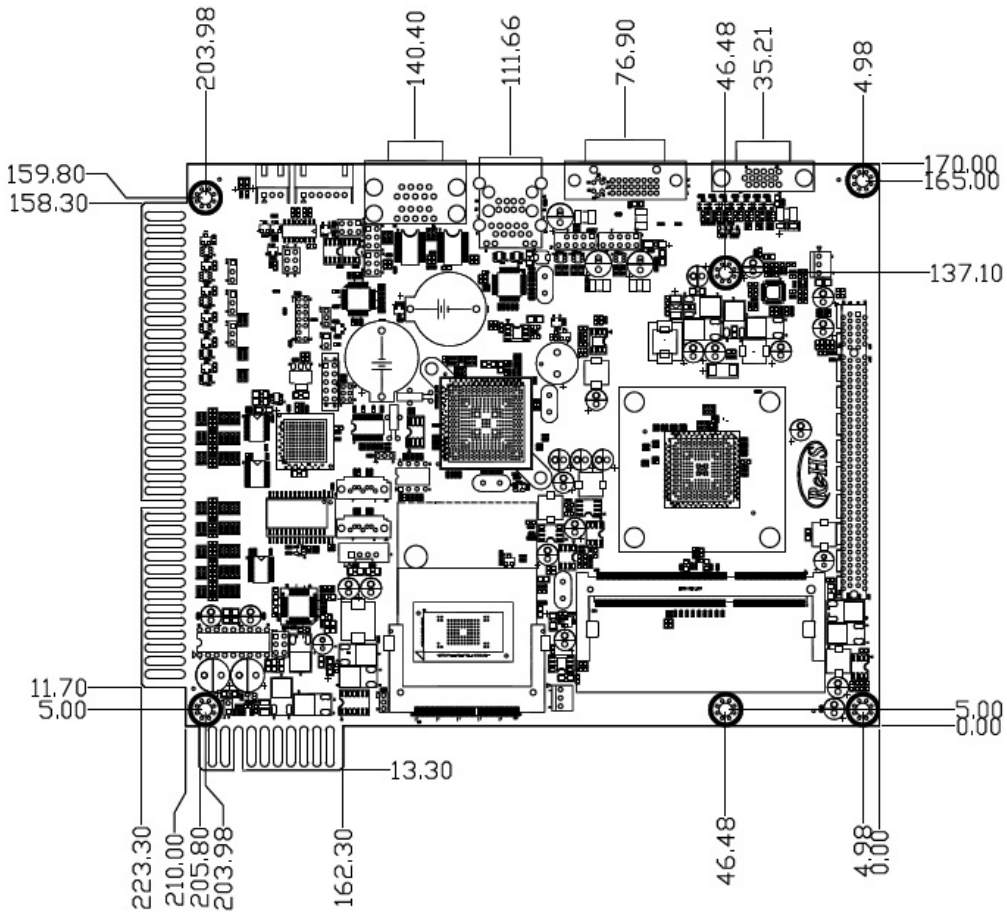
Note:

Once display is lost, reboot system and enter BIOS menu for display setting confirmation. Check BIOS setting of display indicated on the above table according to the display monitor connected.

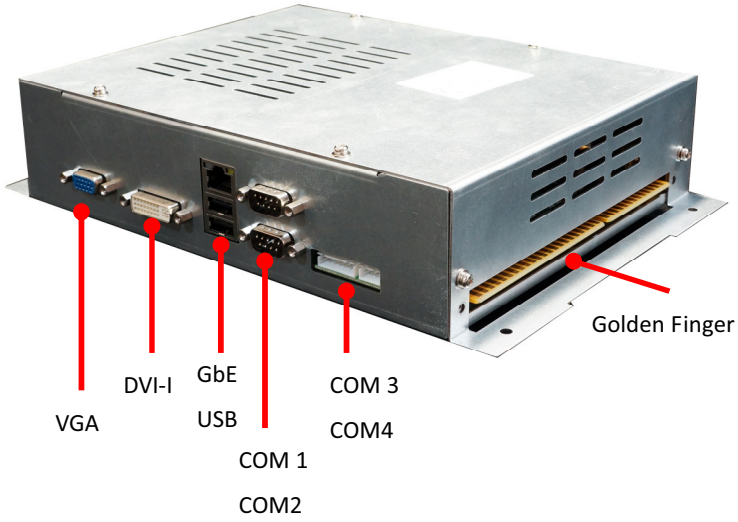
Note:

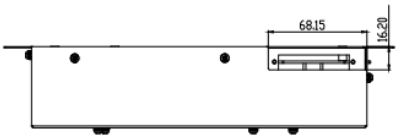
For two VGA displays, DVI-I include VGA display function, customer can have VGA output from DVI-I connector by setup BIOS and DVI-to-VGA cable or adapter.

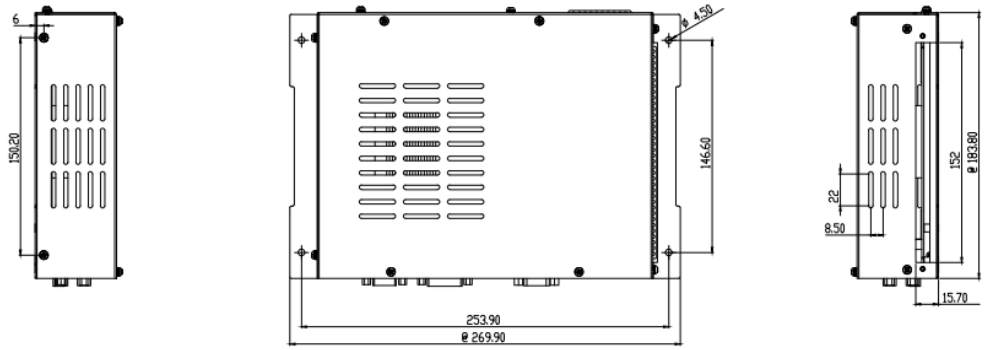
1.7 Board / System Dimensions

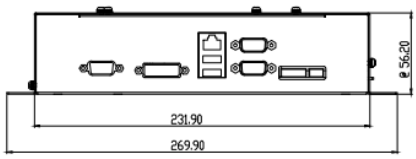


PL-64010 (Platform-level product)





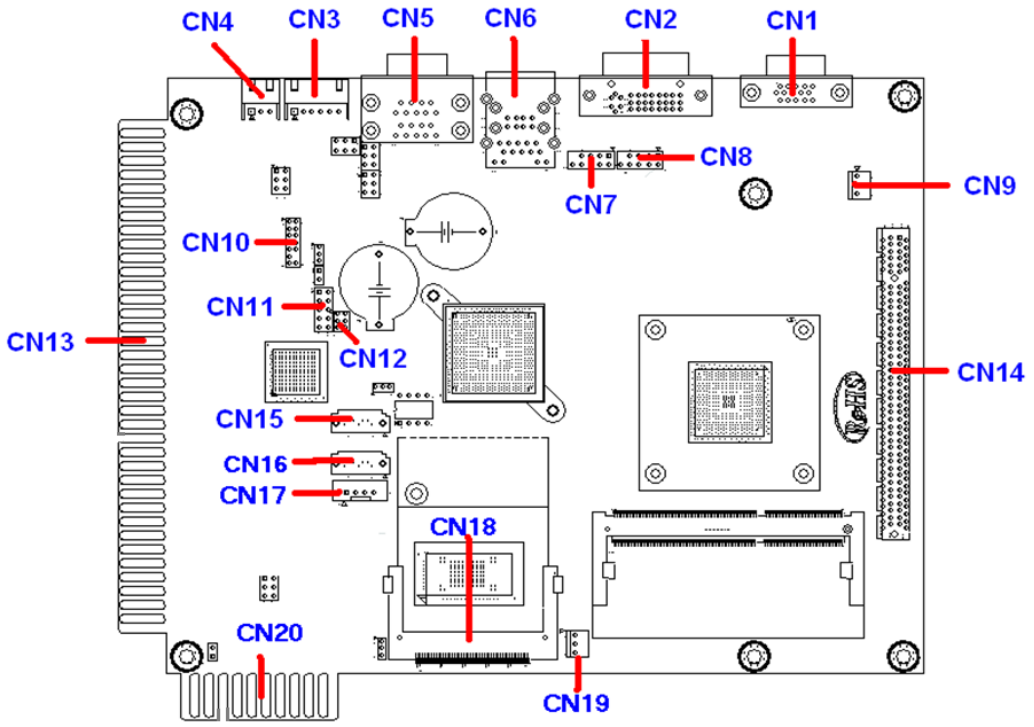




Chapter 2. Connector/Jumper Configuration

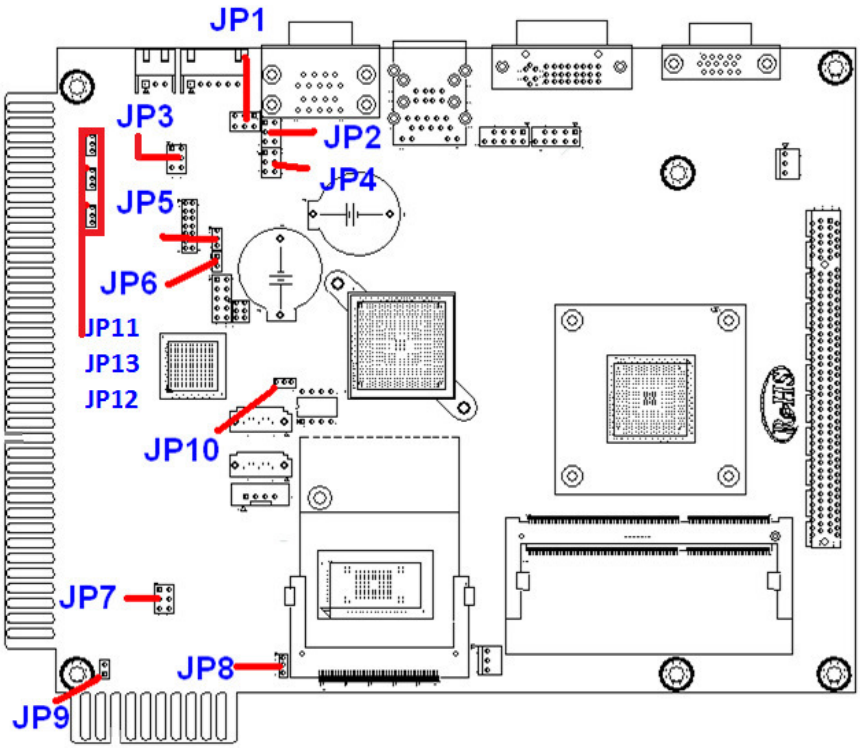
2.1 Connector/Jumper Location and Definition

Connector:



Connector	Define	Connector	Define
CN1	VGA Connector	CN11	FPGA DOWNLOAD PIN
CN2	DVI-I Connector	CN12	FPGA RESERVED
CN3	COM 3 (SIM232&CCTALK)	CN13	GOLDEN-FINGER1
CN4	COM 4 (SIM232)	CN14	PCI_EXPRESS_X4 (x16 slot)
CN5	COM 1 & 2 Connector	CN15	SATA 1 CONNECTOR
CN6	RJ45&USB 0/1	CN16	SATA 2 CONNECTOR
CN7	USB 4/5 PIN HEADER	CN17	SATA POWER CONNECTOR
CN8	USB 2/3 PIN HEADER	CN18	CF Socket
CN9	SYSTEM FAN CONNECTOR	CN19	CPU FAN CONNECTOR
CN10	LPC PIN HEADER	CN20	GOLDEN-FINGER2

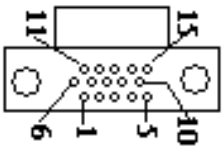
Jumper:



Connector	Define	Connector	Define
JP1	COM2 MODE SELECT (1-2: RS232 ; 3-4: RS485 4-Wire ; 5-6: RS485 2-Wire)	JP6	FPGA RESERVED
JP2	COM2 MODE SELECT (1-3short 2-4short: RS232 ; 3-5 short4-6 short: RS485)	JP7	AUDIO ON/OFF (1-3short 2-4short: Audio ON; 3-5short 4-6short: Audio OFF)
JP3	COM3 MODE SELECT (1-3short 2-4short: SIM232; 3-5short 4-6short: CCTALK)	JP8	NANDrive_WP_N(1-2:ON 2-3:OFF)
JP4	COM2 MODE SELECT (1-3short 2-4short : RS232 ; 3-5short 4-6short : RS485)	JP9	RESET
JP5	Clear CMOS (1-2: Hold CMOS; 2-3: Clear CMOS)	JP10	EEPROM_WP_N (1-2:ON 2-3OFF)
JP11, 12, 13	Golden finger Power (1-2:+5V ; 2-3:+12) Note: Please setup jumper according to external I/O voltage usage.		

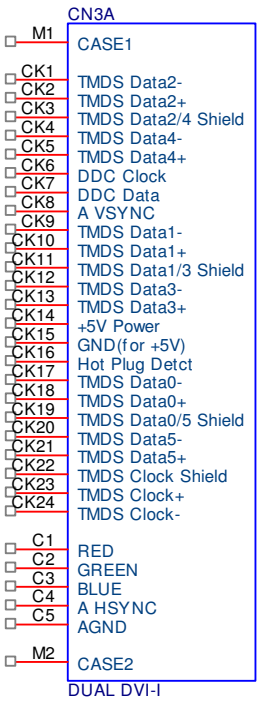
2.2 Connector and Jumper Setting

CN1: VGA pin header



Pin	Define	Pin	Define
1	RED	2	GREEN
3	BLUE	4	NC
5	Ground	6	Ground
7	Ground	8	Ground
9	+5V	10	Ground
11	NC	12	SDA
13	HSYNC	14	VSYNC
15	SCL		

CN2: DVI Connector (DVI-I)



Pin	Define	Pin	Define

M1	CASE GND	M2	CASE GND
CK1	DP0_TX0_N	CK2	DP0_TX0_P
CK3	GND	CK4	-
CK5	-	CK6	DP0_AUX_P
CK7	DP0_AUX_N	CK8	-
CK9	DP0_TX1_N	CK10	DP0_TX1_P
CK11	GND	CK12	-
CK13	-	CK14	+5V
CK15	GND	CK16	DVID_HPD
CK17	DP0_TX2_N	CK18	DP0_TX2_P
CK19	GND	CK20	-
CK21	-	CK22	GND
CK23	DP0_TX3_N	CK24	DP0_TX3_P
C1	Red	C2	Green
C3	Blue	C4	Hsync
C5	AGND		

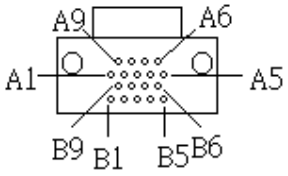
CN3: COM3

Pin	Define
1	+12V
2	CCTALK
3	GND
4	SOUT
5	SIN
6	GND

CN4: COM4

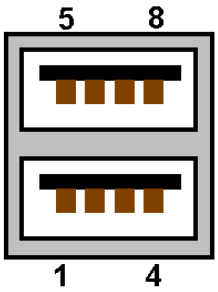
Pin	Define
1	SOUT
2	SIN
3	GND

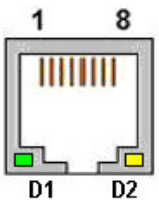
CN5:COM1 and COM2 Jack



Pin	Signal	Pin	Signal
A1	DCD	B1	DCD
A2	RXD	B2	RXD
A3	TXD	B3	TXD
A4	DTR	B4	DTR
A5	Ground	B5	Ground
A6	DSR	B6	DSR
A7	RTS	B7	RTS
A8	CTS	B8	CTS
A9	R1	B9	R1

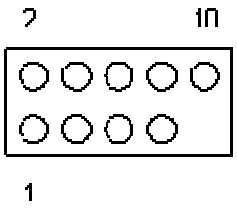
CN6: USB and 100/10 LAN RJ45 Jack





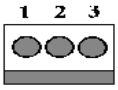
Pin	Signal	Pin	Signal
1	5VUSB0	1	TX+
2	USBDT0-	2	TX-
3	USBDT0+	3	N/C
4	Ground	4	Ground
5	5VUSB0	5	Ground
6	USBDT1-	6	N/C
7	USBDT1+	7	RX+
8	Ground	8	RX-

CN7 & CN8: USB pin header



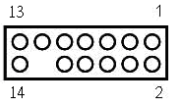
Pin	Define	Pin	Define
1	+5V	2	+5V
3	P0DATA-	4	P1DATA-
5	P0DATA+	6	P1DATA+
7	GND	8	GND
9	Reserved	10	GND

CN9: SYSTEM FAN Connector



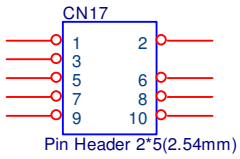
Pin	Define
1	Ground
2	+12V
3	NC

CN10: LPC Connector



Pin	Define	Pin	Define
1	+3.3V	2	AD 0
3	AD 1	4	AD 2
5	AD 3	6	Frame#
7	PCIERST#	8	+5V
9	CLOCK	10	PME#
11	GND	12	
13	SERIRQ	14	LDRQ

CN11: FPGA Update Pin Header



Pin	Define	Pin	Define
1	TCK	2	GND
3	TDO	4	NC
5	TMS	6	VJTAG
7	VPUMP	8	TRST
9	TDI	10	GND

CN12: FPGA Reserved

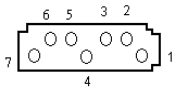
CN13: 72-pin Golden Finger Pin Definition (PCB & Edge Connector)

Solder (Bottom) Side		Component (Top) Side	
Golden Finger Pin#	Signal Name	Golden Finger Pin#	Signal Name
B1	GND	A1	GND
B2	SPEAKER -	A2	SPEAKER + (R)
B3	SPEAKER -	A3	SPEAKER + (L)
B4	IN19	A4	IN0
B5	IN20	A5	IN1
B6	IN21	A6	IN2
B7	IN22	A7	IN3
B8	IN23	A8	IN4
B9	IN24	A9	IN5
B10	IN25	A10	IN6
B11	Nc	A11	IN7
B12	Nc	A12	IN8
B13	Nc	A13	IN9
B14		A14	
B15	Nc	A15	IN11
B16	Nc	A16	IN12
B17	IN26	A17	IN13
B18	IN27	A18	IN14
B19	IN28	A19	IN15
B20	IN29	A20	IN16
B21	IN30	A21	IN17
B22	IN31	A22	IN18
B23	OUT12	A23	OUT0
B24	OUT13	A24	OUT1
B25	OUT14	A25	OUT2
B26	OUT15	A26	OUT3
B27	OUT16	A27	OUT4
B28	OUT17	A28	OUT5
B29	OUT18	A29	OUT6
B30	OUT19	A30	OUT7
B31	OUT20	A31	OUT8
B32	OUT21	A32	OUT9

B33	OUT22	A33	OUT10
B34	OUT23	A34	OUT11 (ULN2803)
B35	GND	A35	GND
B36	GND	A36	GND

CN14: PCI_Expressx16

CN15 & CN16 SATA Connector



Pin	Define
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

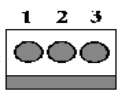
CN17: SATA POWER CONNECTOR

Pin	Define
1	+12V
2	GND
3	GND
4	+5V

CN18: CF SOCKET

Pin	Define	Pin	Define
1	GND	26	CF_CD-1
2	IDE_PDD3	27	IDE_PDD11
3	IDE_PDD4	28	IDE_PDD12
4	IDE_PDD5	29	IDE_PDD13
5	IDE_PDD6	30	IDE_PDD14
6	IDE_PDD7	31	IDE_PDD15
7	IDE_PDCS1_N	32	IDE_PDCS3_N
8	GND	33	GND
9	GND	34	IDE_PDIOR_N
10	GND	35	IDE_PDIOW_N
11	GND	36	CF_PIN36
12	GND	37	IDE_IRQ
13	+5V	38	+5V
14	GND	39	GND
15	GND	40	NC
16	GND	41	IDE_RST_N
17	GND	42	IDE_PDIORDY
18	IDE_PDA2	43	IDE_PDDREQ
19	IDE_PDA1	44	IDE_PDDACK_N
20	IDE_PDA0	45	IDE_ACTP_N
21	IDE_PDD0	46	IDE_PDIAG_N
22	IDE_PDD1	47	IDE_PDD8
23	IDE_PDD2	48	IDE_PDD9
24	IDE_CS16_N	49	IDE_PDD10
25	NC	50	GND

CN19: CPU FAN Connector



Pin	Define
1	Ground
2	+12V
3	NC

CN20: 20-pin Golden Finger Pin Definition (PCB & Edge Connector)

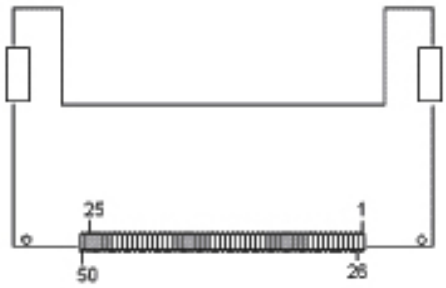
Solder (Bottom) Side		Component (Top) Side	
Golden Finger Pin#	Signal Name	Golden Finger Pin#	Signal Name
B1	GND	A1	GND
B2	GND	A2	GND
B3	+5V	A3	+5V
B4	+5V	A4	+5V
B5	+12V	A5	+12V
B6	+12V + R	A6	+12V + R
B7	OUT11 (MOSFET)	A7	OUT11 (MOSFET)
B8		A8	
B9	GND	A9	GND
B10	GND	A10	GND

2.3 CompactFlash Card Socket Pin Define

CompactFlash™ card is a small removable mass storage device. It can provide complete PCMCIA-ATA functionality and compatibility plus True IDE functionality compatible with ATA/ATAPI-4.

CompactFlash™ storage products are solid state form factor, it means they contain no moving parts. Thus, it provides users with much greater protection of the data than conventional magnetic disk device.

Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment
1	Ground	11	Ground	21	D00	31	D15	41	RESET
2	D03	12	Ground	22	D01	32	CS	42	ORDY
3	D04	13	VCC/+5V	23	D02	33	NC	43	DREG
4	D05	14	Ground	24	WP	34	IOR	44	DACK
5	D06	15	Ground	25	NC	35	IOW	45	LED
6	D07	16	Ground	26	NC	36	WE	46	BVD
7	CS	17	Ground	27	D11	37	RDY/BSY	47	D08
8	Ground	18	A02	28	D12	38	VCC/+5V	48	D09
9	Ground	19	A01	29	D13	39	SCSE	49	D10
10	Ground	20	A00	30	D14	40	NC	50	Ground



Chapter 3. BIOS Setup

The ROM chip of your MB-64010 board is configured with a customized Basic Input/Output System (BIOS) from AMI BIOS. The BIOS is a set of permanently recorded program routines that give the system its fundamental operational characteristics. It also tests the computer and determines how the computer reacts to instructions that are part of programs.

The BIOS is made up of code and programs that provide the device-level control for the major I/O devices in the system. It contains a set of routines (called POST, for Power-On Self Test) that check out the system when you turn it on. The BIOS also includes CMOS Setup program, so no disk-based setup program is required CMOS RAM stores information for:

- Date and time
- Memory capacity of the appliance
- Type of display adapter installed
- Number and type of disk drives

The CMOS memory is maintained by battery installed on the MB-64010 board. By using the battery, all memory in CMOS can be retained when the system power switch is turned off. The system BIOS also supports easy way to reload the CMOS data when you replace the battery of the battery power lose.

3.1 Quick Setup

In most cases, you can quickly configure the system by choosing the following main menu options:

1. Choose "Exit" ➔ "Load Optimal Defaults" from the main menu. This loads the setup default values from the BIOS Features Setup and Chipset Features Setup screens.
2. Choose "Main" & "Advanced" from the main menu. This option lets you configure the date and time, hard disk type, floppy disk drive type, primary display and more.
3. In the main menu, press F10 ("Save Changes and Exit") to save your changes and reboot the system.

3.2 Entering the CMOS Setup Program

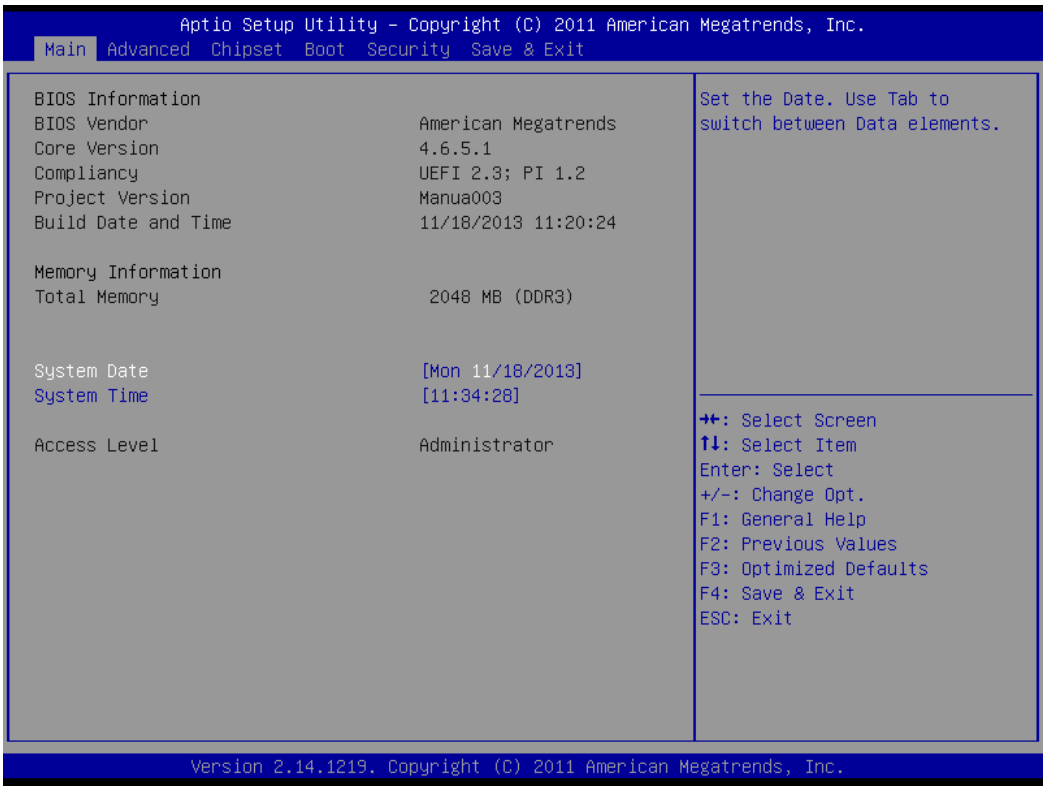
Use the CMOS Setup program to modify the system parameters to reflect the options installed in your system and to customize your system. For example, you should run the Setup program after you:

- Received an error code at startup
- Install another disk drive
- Use your system after not having used it for a long time
- Find the original setup missing
- Replace the battery
- Change to a different type of CPU
- Run the AMI Flash program to update the system BIOS

Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

⇩ **Enter the CMOS Setup program's main menu as follows:**

1. Turn on or reboot the system. After the BIOS performs a series of diagnostic checks, the following message appears:
   "Press DEL to enter SETUP"
2. Press the <DEL> key to enter CMOS Setup program. The main menu appears:



Main: For changing the basic system configurations.

Advanced: For changing the advanced system settings.

Chipset: For changing the chipset settings.

Boot: For changing the system boot configurations.

Security: Use this menu to set User and Supervisor Passwords.

Save&Exit: For selecting the exit options and loading default settings.

In the main menu, press <F4> ("Save Changes and Exit") to save your changes and reboot the system. Press <ESC> ("Exit") to ignore your changes and exits the program.

3. Choose a setup option with the arrow keys and press <Enter>. See the following sections for a brief description of each setup option.

3.3 Menu Options

The main menu options of the CMOS Setup program are described in the following and the following sections of this chapter.

BIOS Information: Displays the auto-detected BIOS information.

BIOS Vendor:

Core Version:

Compliancy:

Project Version:

Build Date and Time:

Memory Information: Displays the auto-detected system memory.

Total Memory:

System Date [Day mm/dd/yyyy]: This item allows you to set the system date.

SystemTime: [hour:min:sec]: This item allows you to set the system time.

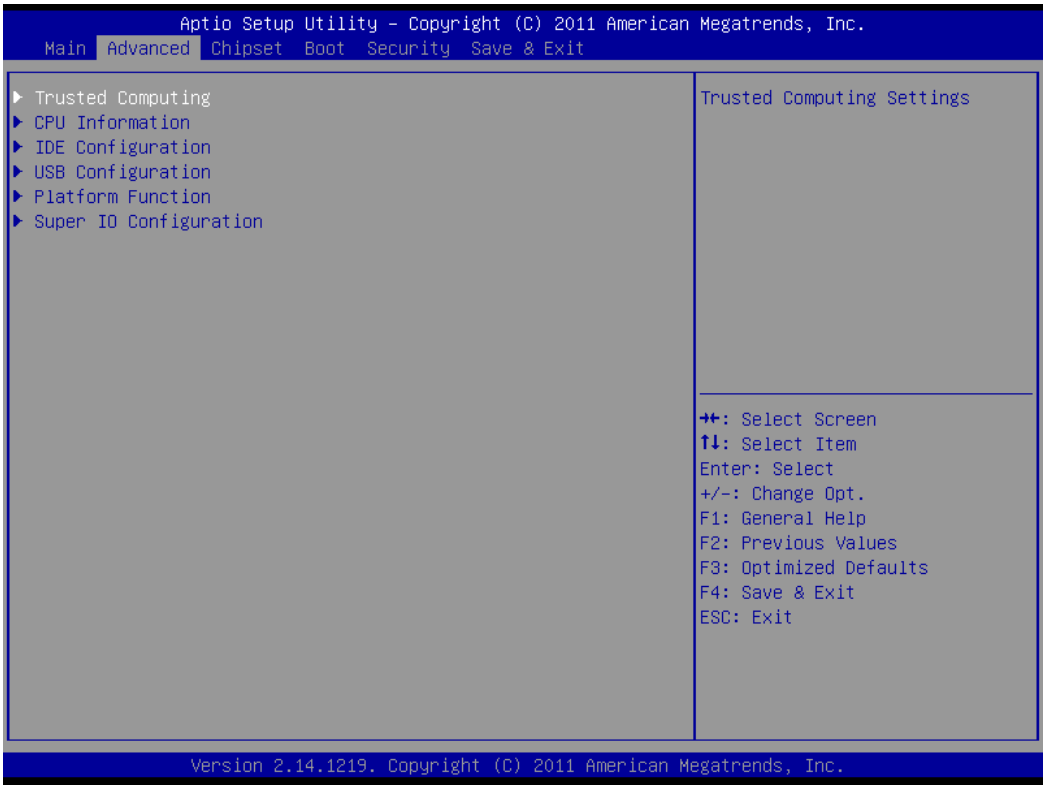
Access Level: This item allows you to set the authority to access system.

3.4 Advanced Menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

Use the Advanced Setup option as follows:

1. Choose "Advanced" from the main menu. The following screen appears:

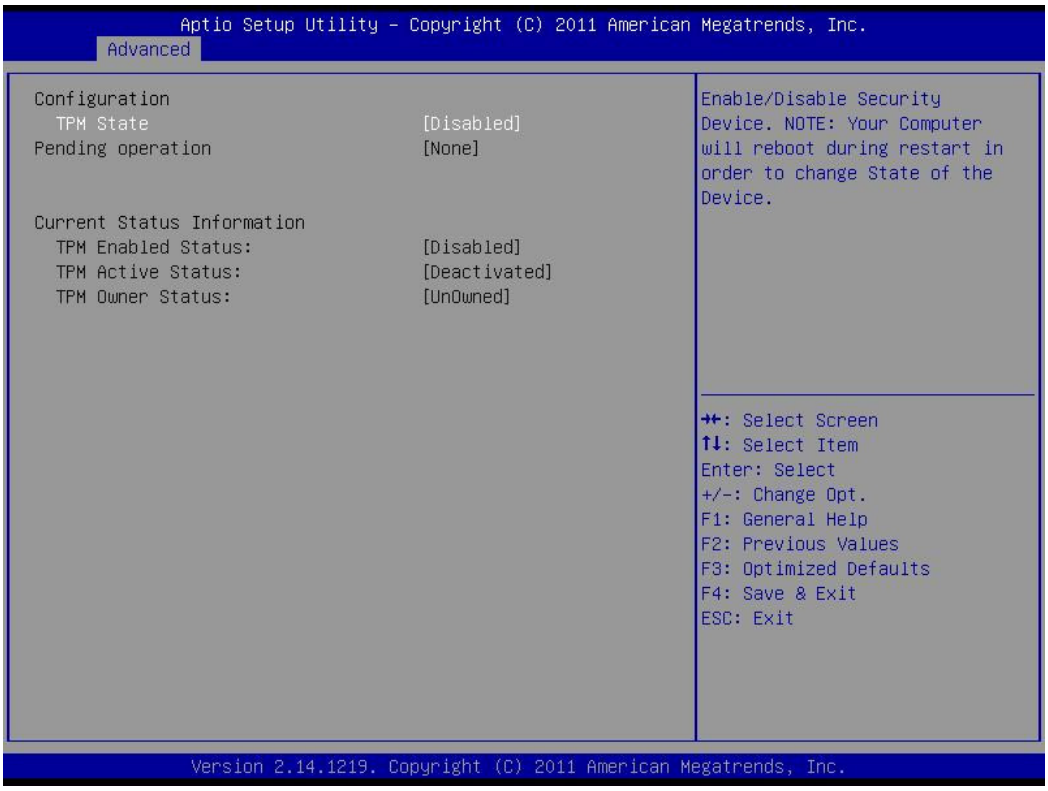


2. Use the arrow keys to move between fields. Modify the selected field using the PgUP/PgDN/+/- keys. Some fields let you enter numeric values directly.

3. After you have finished with the Advanced setup, press the <ESC> key to return to the main menu.

3.4.1 Trusted Computing

This sub menu allows you to set or change the configurations for the TPM function.



Configuration

TPM State: [Disabled]

This item allows you to enable or disable security device.

[Note]: Your computer will reboot during restart in order to change state of the device.

Pending operation: [None]

Current Status Information

This information shows current status of TPM with following items.

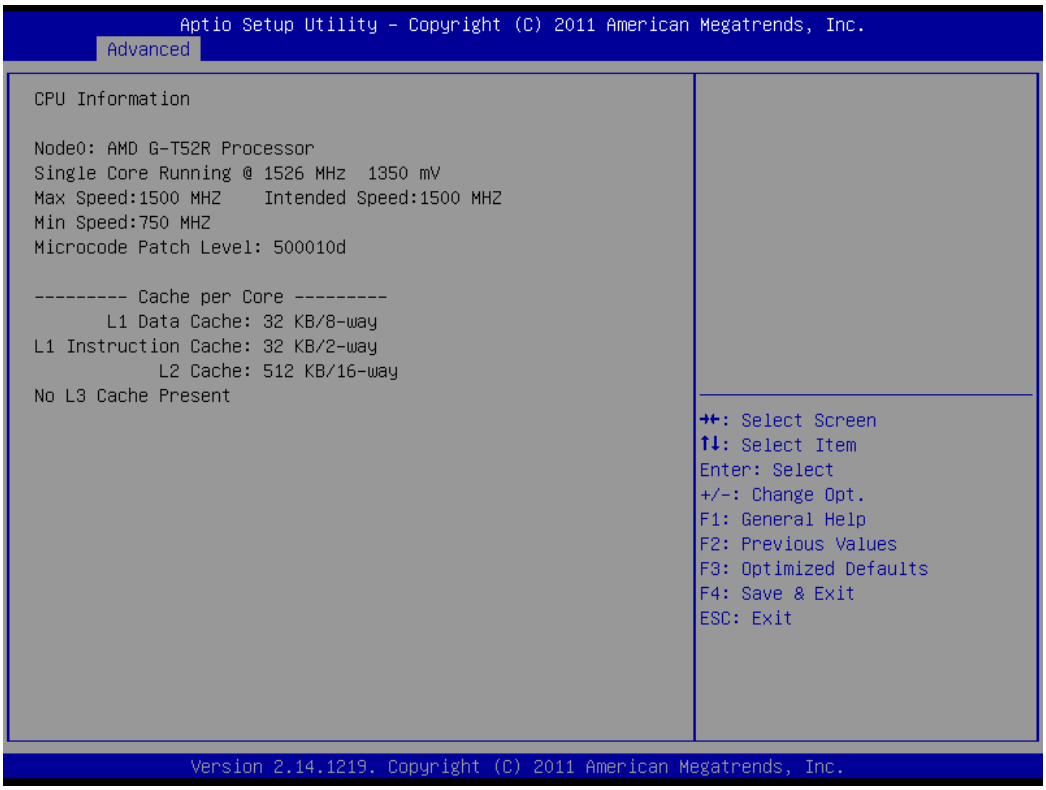
TPM Enabled Status: [Disabled]

TPM Active Status: [Deactivated]

TPM Owner Status: [UnOwned]

3.4.2 CPU Information

This sub-menu shows the CPU related information which is automatically detected by BIOS.

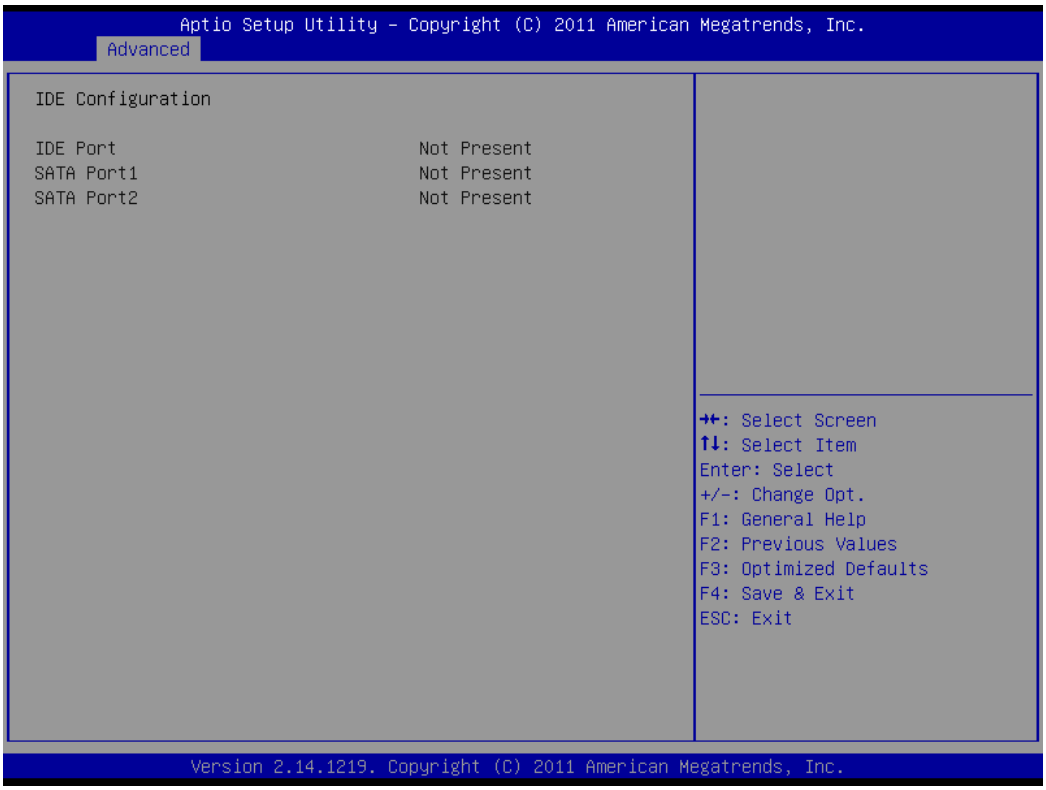


CPU Information

This information shows CPU information which using in the system. CPU information includes messages like processor type, power consumption under running frequency, operating speed as well as cache size.

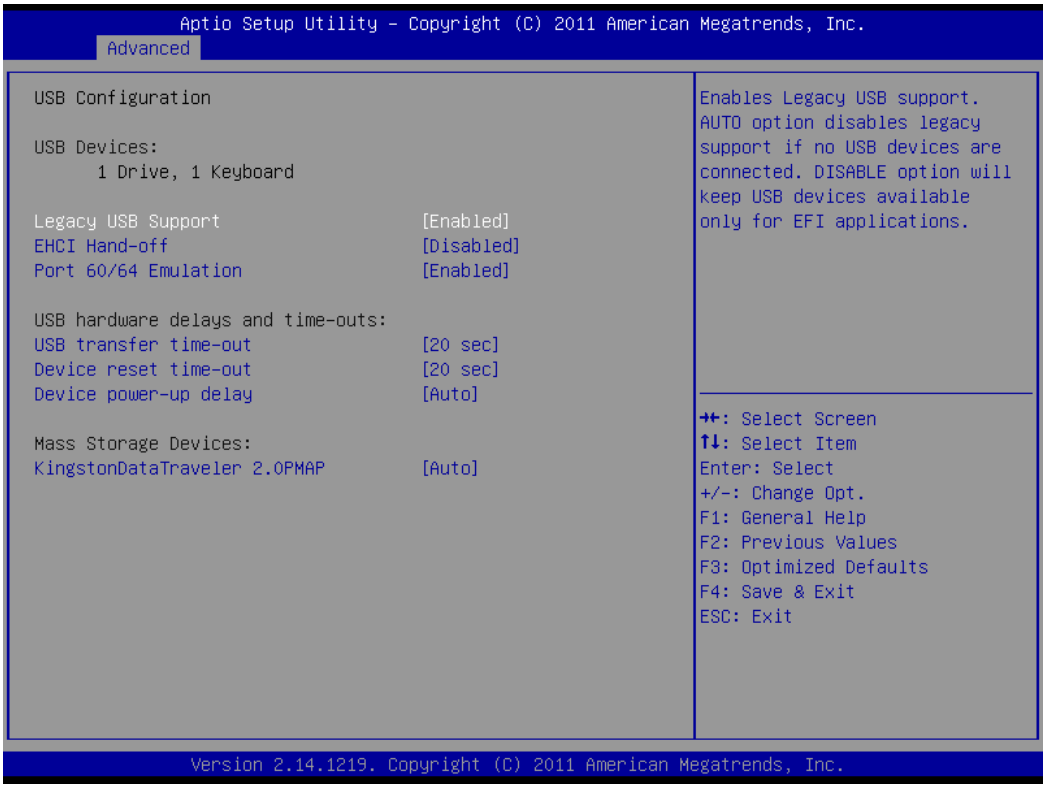
3.4.3 IDE Configuration

This sub menu shows the IDE/SATA device information which is automatically detected by BIOS.



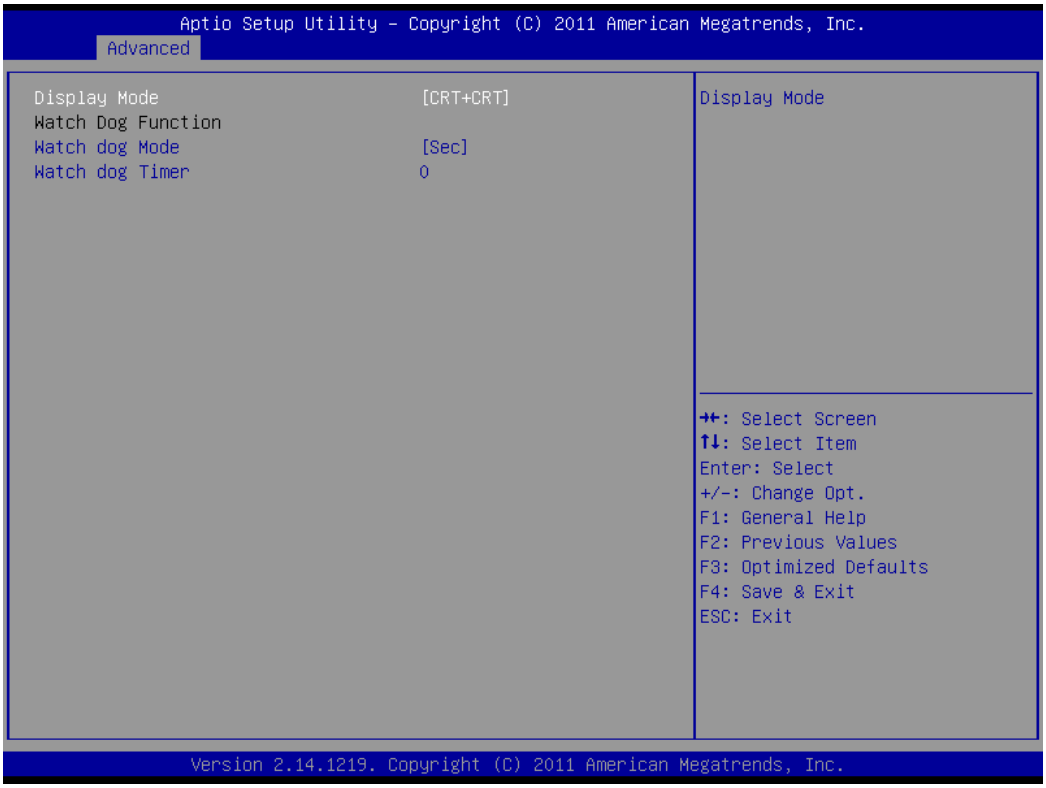
IDE Configuration

3.4.4 USB Configuration



This sub-menu allows you to set the parameters to support USB devices you are going to use. Mass storage will be detected automatically by system. The menu also allows you to enable/disable legacy USB device and EHCI hand-off.

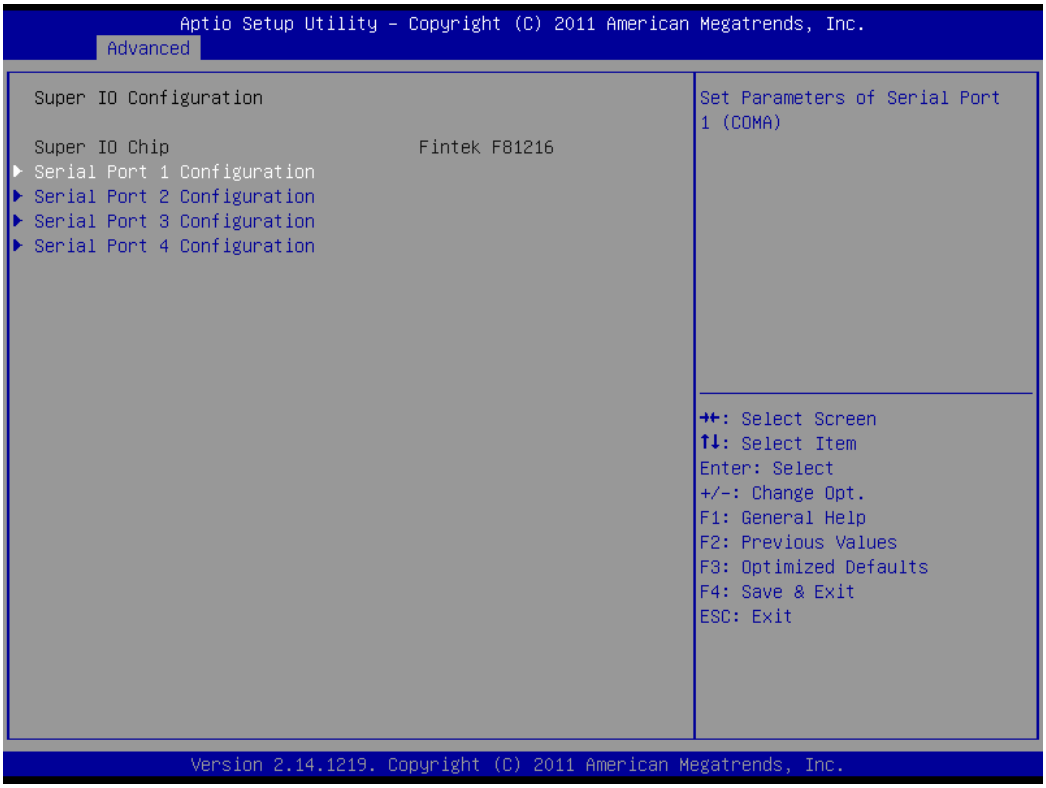
3.4.5 Platform Function



Display Mode. This item allows user to change display method.

This menu allows you to setup watchdog timer. The timer can be set in a second- or minute-mode.

3.4.6 Super IO Configuration

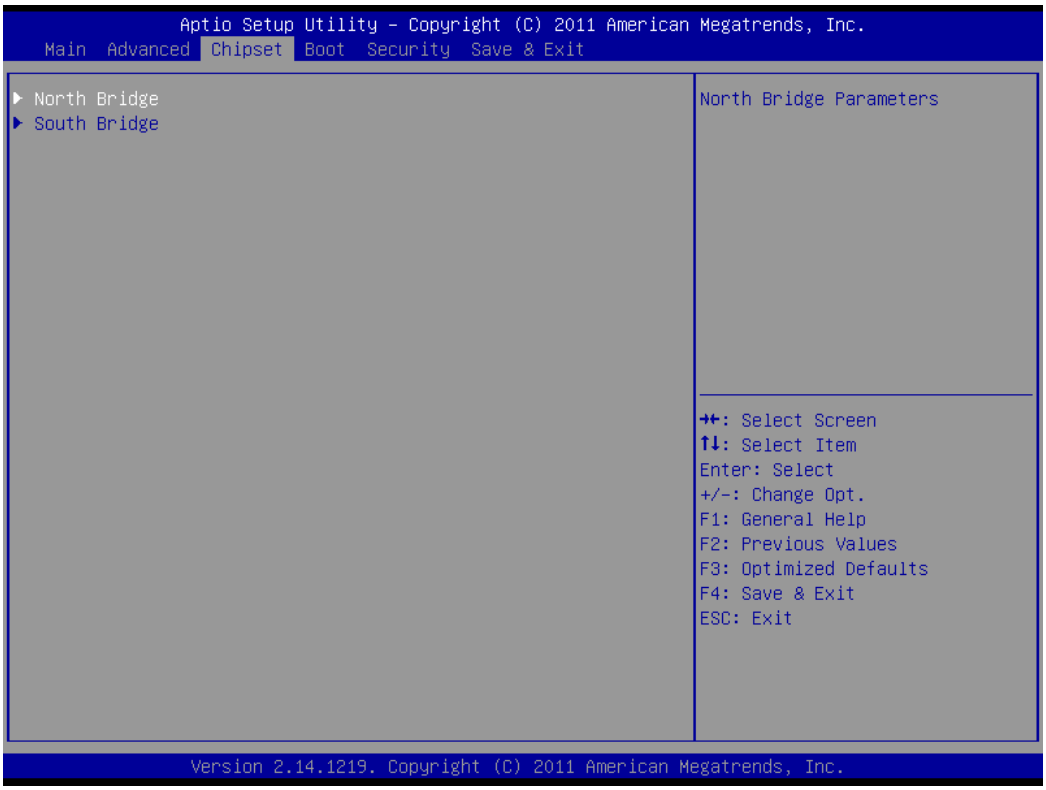


Super IO function provides 4 ports IO for various control. Those ports can be configured respectively.

3.5 Chipset Menu

Use the Chipset Setup option as follows:

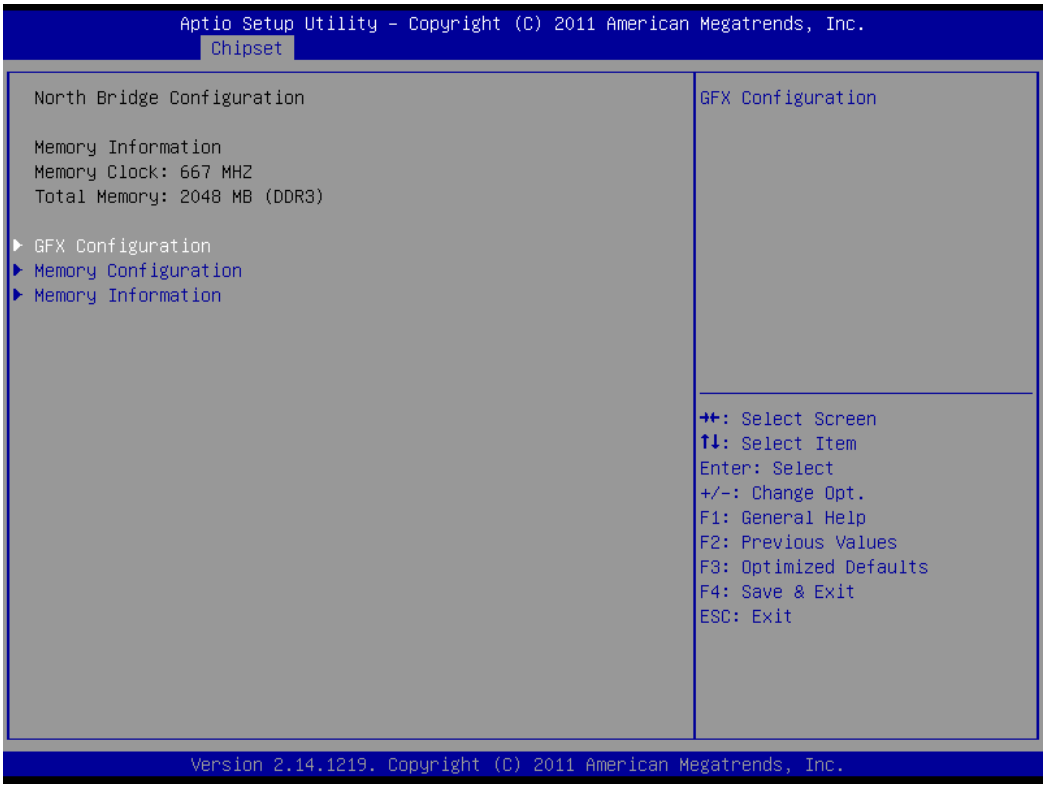
1. Choose "Chipset" from the main menu. The following screen appears.



2. Move between items and select values by using the arrow keys. Modify the selected field the PgUP/PgDN keys. For information on the various options, press <F1> key.

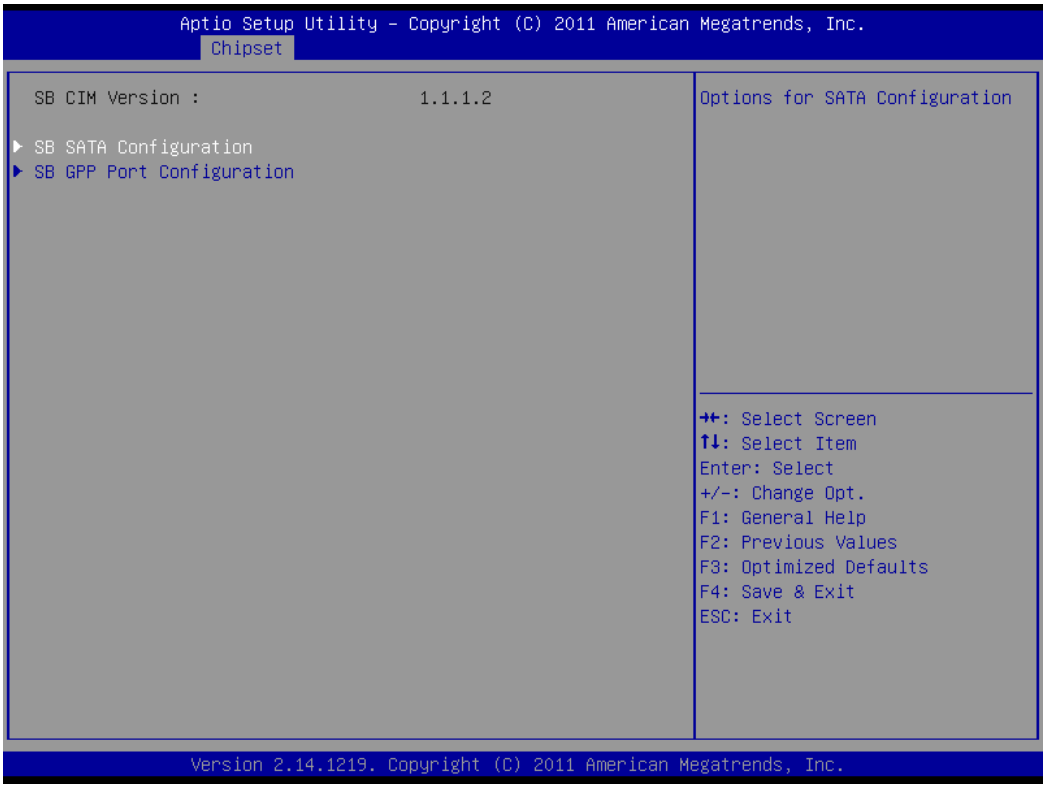
3. After you have finished with the Chipset Setup, press the <ESC> key to return to the main menu.

3.5.1 North Bridge



It allows you to configure the parameter of NorthBridge, includes clock, timing, VGA frame buffer and etc..

3.5.2 South Bridge

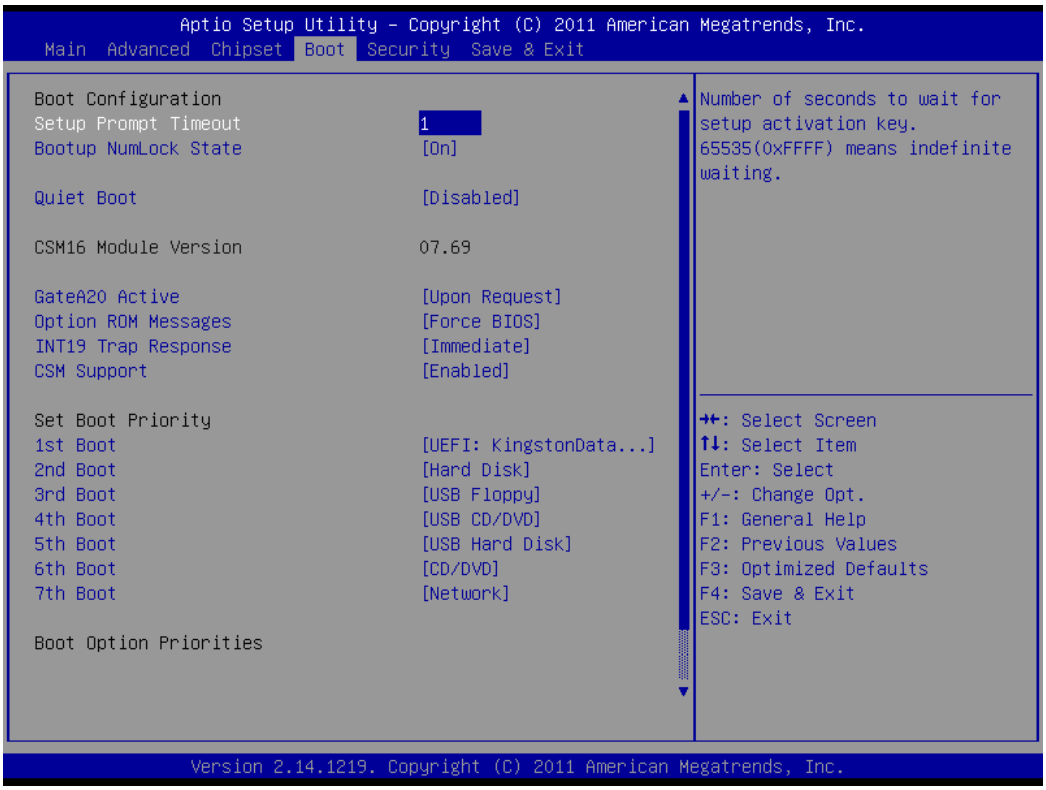


It allows you to configure the parameter of SoughBridge, including LAN, Audio, etc.

3.6 Boot Menu

Use the Boot Setup option as follows:

1. Choose "Boot" from the main menu. The following screen appears:



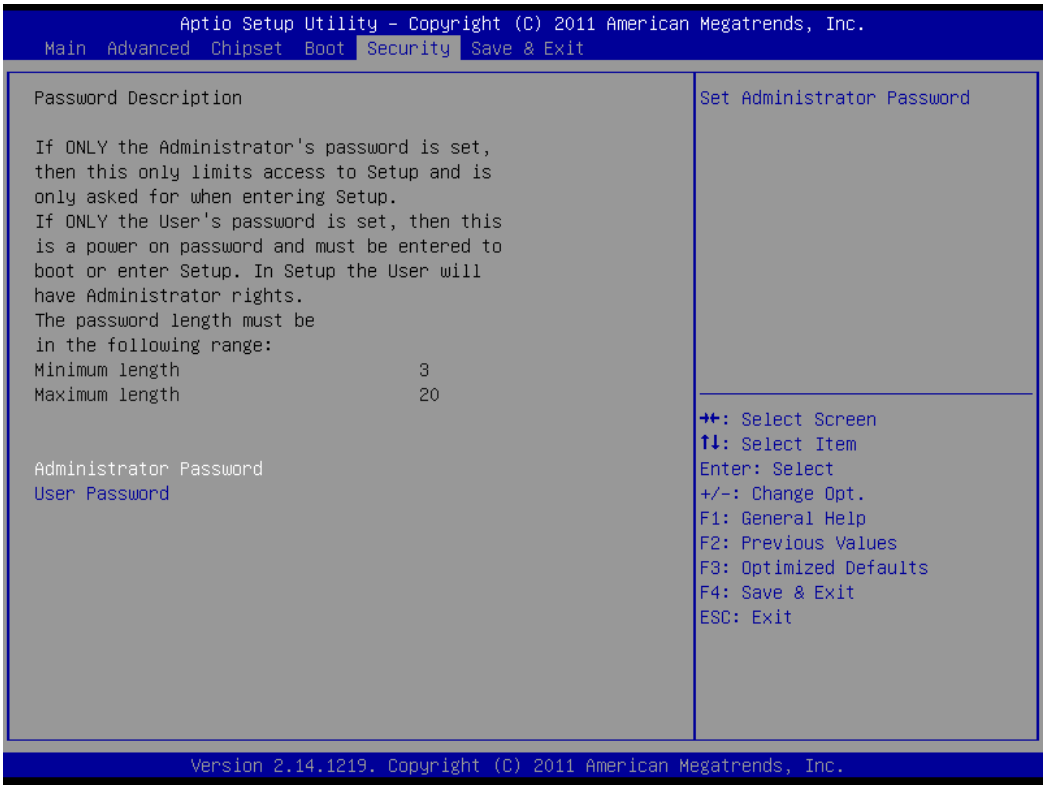
2. Move between items and select values by using the arrow keys. Modify the selected fields using the PnUP/PgDN Keys. For information on the various options, press <F1> key.

3. After you have finished with the Boot setup, press the <ESC> key to return to the main menu.

3.7 Security Menu

Use the Security Setup option as follows:

1. Choose "Security" from the main menu. The following screen appears:



2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. Press the <F1> key for information on the various options.

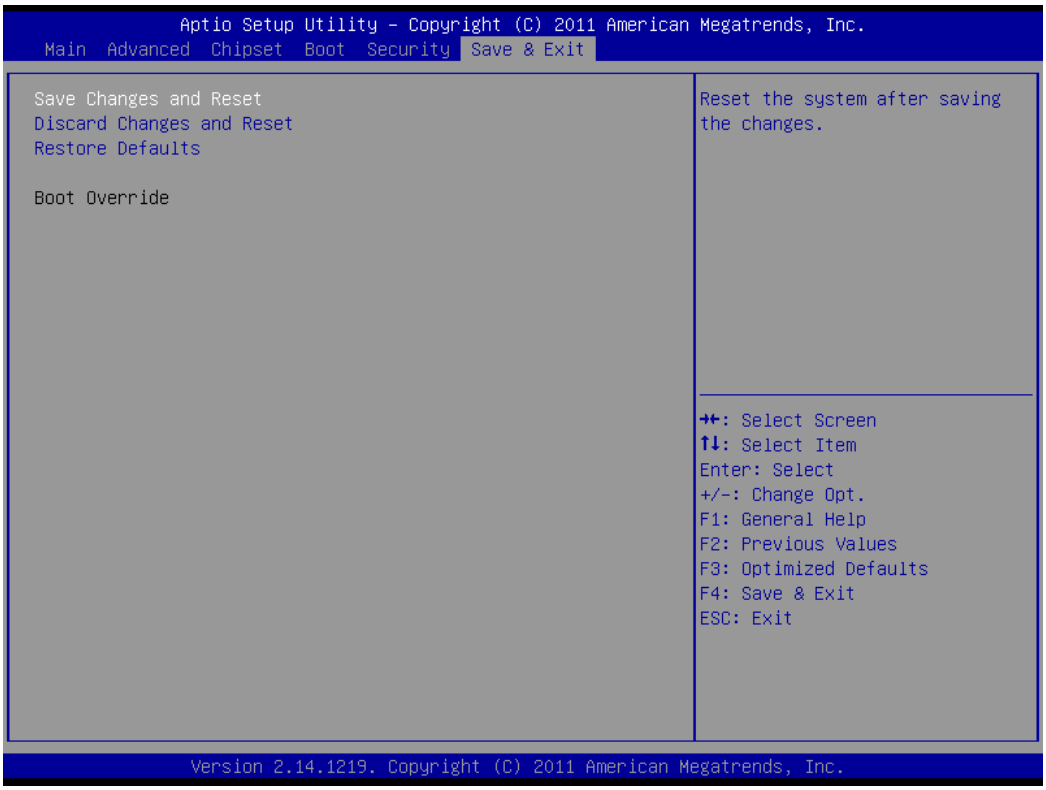
3. After you have finished with the Security setup, press the <ESC> key to return to the main menu.

3.8 Exit

The item allows you to save or discard your changes to the BIOS items; and load the optimal defaults or failsafe defaults for the BIOS items.

Use the Exit option as follows:

1. Choose "Exit" from the main menu, the following screen appears.



2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. For information on the various options, please press <F1> key.

3. Please press the <ESC> key to return the main menu after finishing with the Exit Options.

Appendix A: System Resources

Interrupt Controller:

The MB-64010 is a fully PC compatible appliance. If you would like to use extra add-on cards, please make sure that the IRQs do not conflict.

Any remaining IRQs then may be assigned to this PCI Bus. You are able to use Microsoft's Diagnostic (MDS.EXE) utility included in Windows directory to see their map.

IRQ	Assignment
IRQ0	ISA/Timer
IRQ1	ISA/Keyboard
IRQ2	ISA/Interrupt re-routing from IRQ8 ~ IRQ15
IRQ3	ISA/COM2
IRQ4	ISA/COM1
IRQ5	ISA/Free
IRQ6	ISA/FDD Controller
IRQ7	PCI/PCI-PCI Bridge
IRQ8	ISA/RTC
IRQ9	ISA/Free
IRQ10	PCI/IDE Controller
IRQ11	PCI/VGA Adapter
IRQ12	ISA/Mouse
IRQ13	ISA/Coprocessor
IRQ14	ISA/IDE Controller
IRQ15	ISA/IDE Controller

DMA Channel Assignment:

Channel 4 is by default used to cascade to two controllers

Channel	Assignment
DMA0	ISA/Free
DMA1	ISA/Free
DMA2	ISA/FDD Controller
DMA3	ISA/Free
DMA4	ISA/Cascade
DMA5	ISA/Free
DMA6	ISA/Free
DMA7	ISA/Free

Memory Map:

The following table indicates memory of MB-64010. The address ranges specify the run-time code length.

Memory below 1 Mb (1 Mb ~ 635 KB)

Address Range	Type	Owner
A0000 ~ AFFFF	ISA	VGA Adapter
B0000 ~ BFFFF	ISA	VGA Adapter
C0000 ~ CE3FF	ISA	Adapter ROM
F0000 ~ FFFFF	ISA	System BIOS

Memory above 1 Mb (1 Mb ~ 1826816 KB)

System

Address Range	Type	Owner
C0000000~CFFFFFF7	PCI	VGA Adapter
D0000000~D00FFFFF	PCI	PCI-PCI Bridge
FEB00000~FEB3FFFF	PCI	VGA Adapter
FEB49000~FEB49FFF	PCI	USB Controller
FEB4C000~FEB4CFFF	PCI	USB Controller
FEB4E000~FEB4EFFF	PCI	USB Controller
FEB4F000~FEB4F3FF	PCI	IDE Controller
FFFF0000~FFFFFFFF	PCI	Ethernet Controller

Memory Map

Start High	Start Low	Size High	Size	Type
00000000	00000000	00000000	0009EC00	Available
00000000	0009EC00	00000000	00001400	Reserved
00000000	000E0000	00000000	00020000	Reserved
00000000	00100000	00000000	6F804000	Available
00000000	6F904000	00000000	00101000	NVS Space
00000000	6FA05000	00000000	00008000	ACPI Space
00000000	6FA0D000	00000000	00001000	NVS Space
00000000	6FA0E000	00000000	0005C000	Reserved
00000000	6FA6A000	00000000	0001E000	NVS Space
00000000	6FA88000	00000000	00058000	Reserved
00000000	6FAE0000	00000000	00007000	NVS Space
00000000	6FAE7000	00000000	00419000	Available
00000000	FEC00000	00000000	00001000	Reserved

00000000	FEC10000	00000000	00001000	Reserved
00000000	FED00000	00000000	00001000	Reserved
00000000	FED61000	00000000	00010000	Reserved
00000000	FED80000	00000000	00010000	Reserved
00000000	FEF00000	00000000	01100000	Reserved

I/O Map:

The addresses shown in the table are typical locations

I/O Port	Assignment
170 ~ 177	ISA/IDE Controller
1F0 ~ 1F7	ISA/IDE Controller
2E8 ~ 2EF	ISA/COM4
2F8 ~ 2FF	ISA/COM2
376 ~	ISA/IDE Controller
3B0 ~ 3BB	ISA/VGA Adapter
3C0 ~ 3DF	ISA/VGA Adapter
3E8 ~ 3EF	ISA/COM3
3F6 ~	ISA/IDE Controller
3F8 ~ 3FF	ISA/COM1
E000 ~ EFFF	PCI/PCI-PCI Bridge
F000 ~ F0FE	PCI/VGA Adapter
F100 ~ F10E	PCI/IDE Controller
F110 ~ F112	PCI/IDE Controller
F120 ~ F126	PCI/IDE Controller
F130 ~ F132	PCI/IDE Controller
F140 ~ F146	PCI/IDE Controller

Appendix B: Development Kit (optional)

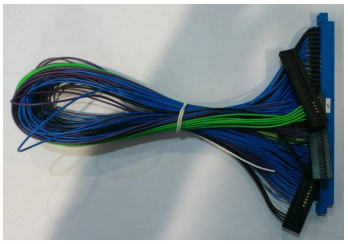
The MB-64010 offers the R217A Gaming I/O testing board and a variety of cables for your development efforts.

DK-GA1210-01

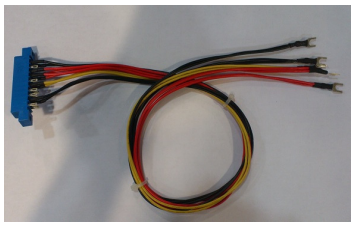
Item & Description	Part No.	Qty
Gaming I/O testing board	R217A-01	1
72 pin golden finger cable	CB-G00027-00	1
20 pin golden finger power cable	CB-JAM002-01	1
SATA cable 35cm	CB-SATA07-00	1
4 pin SATA power cable 25cm	CB-IPOW65-00	1
Dual port USB cable 25cm	CB-IUSB01-00	1
GF to ATX power cable w/ fool-proof	CB-POW002-00	1

R217A-01

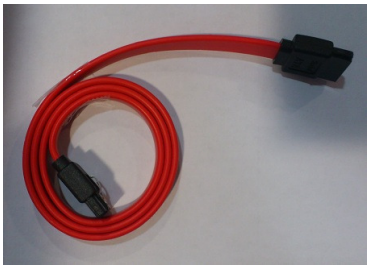
CB-G00027-00



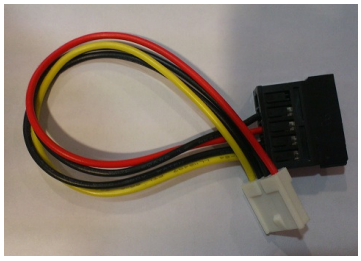
CB-JAM002-01



CB-SATA07-00

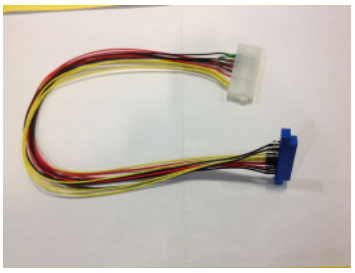


CB-IPOW65-00



CB-IUSB01-00

CB-POW002-00



Email: sales@win-ent.com

PH: +1 (978) 688-2000