Wide Operating Temperature

+85ºC

−40ºC
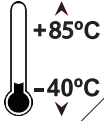
QSM-520E

Wide Range Temperature Qseven® CPU Module

User's Manual
Version 1.0

CE

RoHS
VERIFIED

2013.07

This page is intentionally left blank.

Revision History

Version	Release Time	Description
1.0	July 2013	Initial release

Contents

Copyright Notice

All Rights Reserved.

The information in this document is subject to change without prior notice in order to improve the reliability, design and function. It does not represent a commitment on the part of the manufacturer.

Under no circumstances will the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages arising from the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Declaration of Conformity
CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

Warning
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1)This device may not cause harmful interference, and

(2)This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it:

1. Disconnect your Single Board Computer from the power source when you want to work on the inside.
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry.
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that comes with the Single Board Computer, whenever components are separated from the system.

Replacing the Lithium Battery

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash-can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please do not hesitate to call or e-mail our customer service.

> http://www.arbor.com.tw
> E-mail:info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of two years from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party. Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a

particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned

merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

This page is intentionally left blank.

Chapter 1

Introduction

1.1. The Product

The QSM-520E is a CPU board of Qseven® form factor that works between the temperature from -40ºC to 85ºC. The board is loaded with AMD G-Series "APU" (Accelerated Processing Unit), which combines a low-power CPU and a discrete-level GPU.

The dual-core processor supports dual independent displays with different display techniques and supports the board to deliver high performance multi-media content. The board also enables fanless design, high reliability and low costs by its power-saving processor which can substantially reduce maximum 40% of the power consumption.

By the small form factor, the capable board can help system developers build up ideal system with small foot print for Thin-Clinet, Digital Signage, Kiosks, Point-of-Sales and so on.

1.2. About this Manual

This manual is intended for experienced users and integrators with hardware knowledge of computers. If you are not sure about the description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

1.3. Specifications

Form Factor	Qseven® CPU Module
CPU	Soldered onboard AMD Fusion G-T40E 1.0GHz processor
Chipset	AMD FCH A50M
System Memory	Soldered onboard 2GB DDR3L SDRAM
VGA/ LCD Controller	Integrated AMD Radeon™ HD 6250
Ethernet controller	1 x Realtek RTL8111E PCIe Gigabit Ethernet
BIOS	AMI® UEFI BIOS
Serial ATA	2 x Serial ATA ports w/ 600MB/s HDD transfer rate
Universal Serial Bus	8 x USB 2.0 host ports
Graphics Interface	LCD: Dual Channels 18/24-bit LVDS
	Analog RGB signals (via Qseven® GF reserved pin)
	1 x DDI port
Expansion Interface	4 x PCIe x1 lanes
	LPC interface
Operating Temp.	-40ºC ~ 85ºC (-40ºF ~ 185ºF)
Watchdog Timer	1~ 255 levels Reset
Dimension (L x W)	70 x 70 mm (2.76" x 2.76")

1.4. Inside the Package

Before starting with the installation, make sure the following items are shipped. If any of the items is missing or appears damaged, contact your local dealer or distributor.
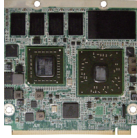
1 x QSM-520E Qseven® CPU Module

1 x Driver CD

1 x Quick Installation Guide

1.5. Ordering Information

QSM-520E-2G-T40E	AMD G-T40E Dual Core Q7 CPU module w/ soldered-onboard 2GB memory

1.5.1. Optional Accessories

HS-0520-C1	Heat sink with fan
PBQ-3000	Qseven® EPIC evaluation board
CBK-06-3000-00	Cable kit 1 x USB cable 1 x USB2 cable 2 x Serial port cables 1 x SATA cable 1 x SATA power cable

1.6. Driver Installation Note

The CPU board supports Windows XP and Windows 7. Find the necessary drivers on the CD that comes with your purchase. For different OS, the driver/ utility installation may vary slightly, but generally they are similar. **DO** follow the sequence below to install all drivers to prevent errors: **Graphics→LAN**.

To install RAID driver, the SATA type of the system's south bridge needs to be changed to RAID first. See 4.3.3.1. SB SATA Configuration for details.

Find the drivers on CD by the following paths:

Windows XP

Driver	Path
Graphics	Graphics\XP\9.00-120815a-146735C-EDG_Direct
LAN	LAN\XP\PCIE_Install_5800_09202012
RAID	others\XP\SB8xx_RAID_XP_3.2.1540.92

Windows 7

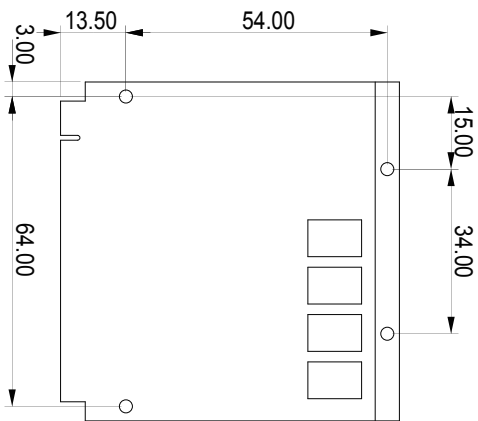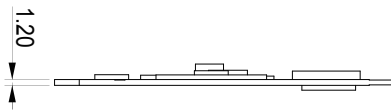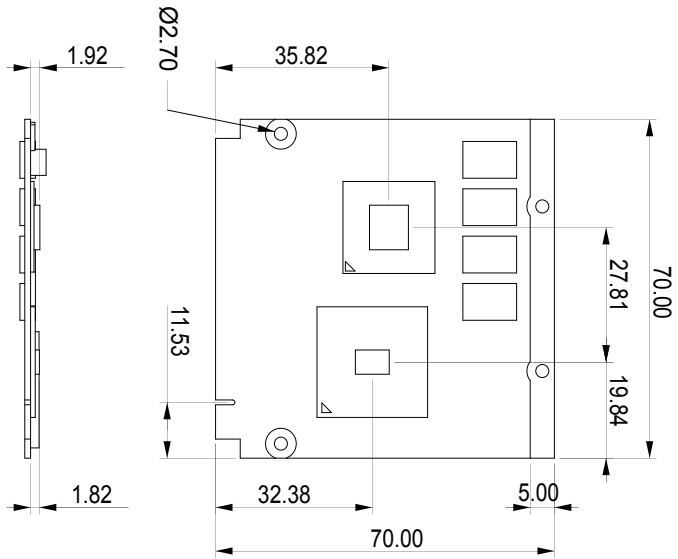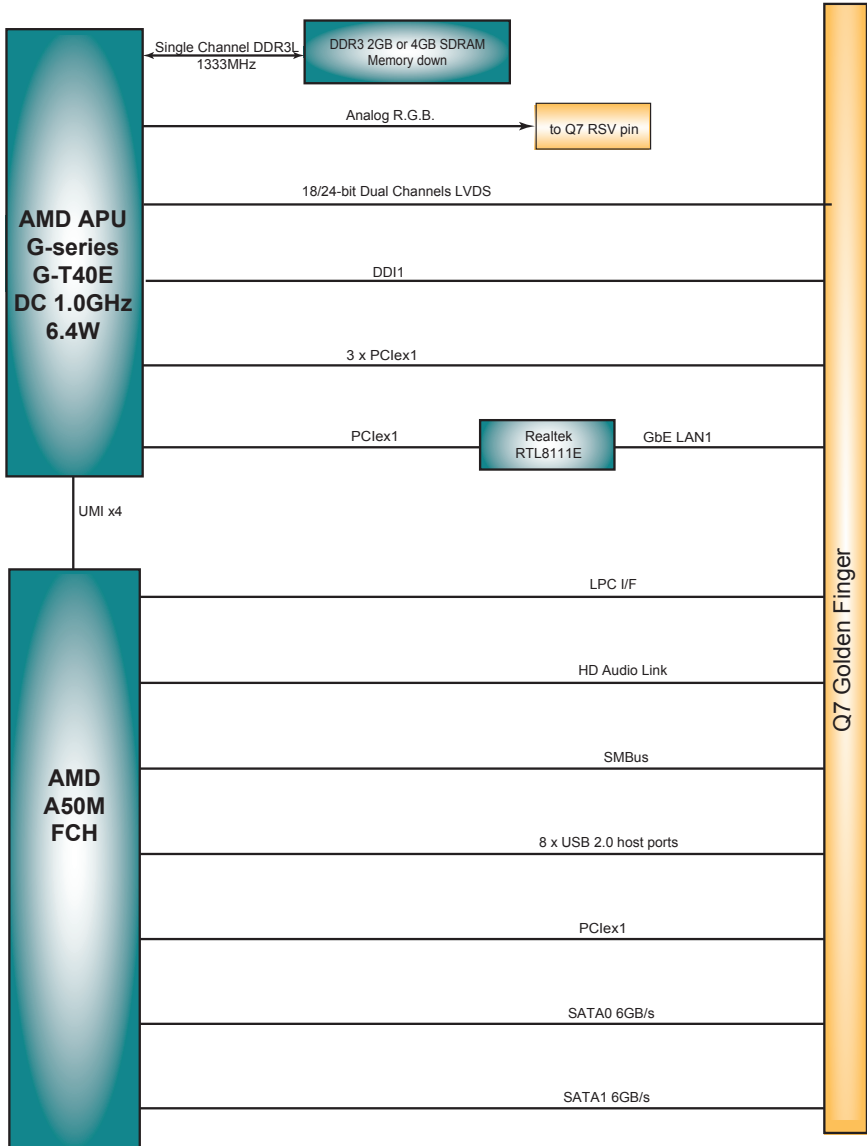| Driver	Path
Graphics	Graphics\Vista_Win7\8.92-111109a-129011C-EDG_Direct
LAN	LAN\Win7_Win8\Install_Win7_7061_09202012

This page is intentionally left blank.

Chapter 2

Board Overview

2.1. Board Dimensions

Unit: mm

2.2. Block Diagram

2.3. Connector Pin Definition

The CPU board relies on a bottom connector to connect with a carrier board. The pin definition is tabulated below:

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	GND	61	HDA_RST#	62	SMB_DAT
3	GBE_MDI3-	4	GBE_MDI2-	63	HDA_BITCLK	64	SMB_ALERT#
5	GBE_MDI3+	6	GBE_MDI2+	65	HDA_SDI	66	I2C_CLK
7	GBE_LINK100#	8	GBE_LINK1000#	67	HDA_SDO	68	I2C_DAT
9	GBE_MDI1-	10	GBE_MDI0-	69	THRM#	70	WDTRIG#
11	GBE_MDI1+	12	GBE_MDI0+	71	THRMTRIP#	72	WDOUT (N/C)
13	GBE_LINK#	14	GBE_ACT#	73	GND	74	GND
15	GBE_CTREF (N/C)	16	SUS_S5#	75	USB_P7-	76	USB_P6-
17	WAKE#	18	SUS_S3#	77	USB_P7+	78	USB_P6+
19	SUS_STAT#	20	PWRBTN#	79	USB_6_7_OC#	80	USB_4_5_OC#
21	SLP_BTN# (N/C)	22	LID_BTN# (N/C)	81	USB_P5-	82	USB_P4-
23	GND	24	GND	83	USB_P5+	84	USB_P4+
	KEY		KEY	85	USB_2_3_OC#	86	USB_0_1_OC#
25	GND	26	PWGIN	87	USB_P3-	88	USB_P2-
27	BATLOW#	28	RSTBTN#	89	USB_P3+	90	USB_P2+
29	SATA0_TX+	30	SATA1_TX+	91	USB_HOST_PRES# (N/C)	92	USB_HC_SEL (N/C)
31	SATA0_TX-	32	SATA1_TX-	93	USB_P1-	94	USB_P0-
33	SATA_ACT#	34	GND	95	USB_P1+	96	USB_P0+
35	SATA0_RX+	36	SATA1_RX+	97	GND	98	GND
37	SATA0_RX-	38	SATA1_RX-	99	LVDS_A0+	100	LVDS_B0+
39	GND	40	GND	101	LVDS_A0-	102	LVDS_B0-
41	BIOS_DISABLE#	42	SDIO_CLK# (N/C)	103	LVDS_A1+	104	LVDS_B1+
43	SDIO_CD# (N/C)	44	SDIO_LED (N/C)	105	LVDS_A1-	106	LVDS_B1-
45	SDIO_CMD (N/C)	46	SDIO_WP (N/C)	107	LVDS_A2+	108	LVDS_B2+
47	SDIO_PWR# (N/C)	48	SDIO_DAT1 (N/C)	109	LVDS_A2-	110	LVDS_B2-
49	SDIO_DAT0 (N/C)	50	SDIO_DAT3 (N/C)	111	LVDS_PPEN	112	LVDS_BLEN
51	SDIO_DAT2 (N/C)	52	SDIO_DAT5 (N/C)	113	LVDS_A3+	114	LVDS_B3+
53	SDIO_DAT4 (N/C)	54	SDIO_DAT7 (N/C)	115	LVDS_A3-	116	LVDS_B3-
55	SDIO_DAT6 (N/C)	56	RSVD (N/C)	117	GND	118	GND
57	GND	58	GND	119	LVDS_A_CLK+	120	LVDS_B_CLK+
59	HDA_SYNC	60	SMB_CLK	121	LVDS_A_CLK-	122	LVDS_B_CLK-

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
123	LVDS_BLT_CTRL	124	RSVD (N/C)	193	VCC_RTC	194	SPKR
125	LVDS_DID_DAT	126	LVDS_BLC_DAT	195	FAN_TACHOIN (N/C)	196	FAN_PWMOUT (N/C)
127	LVDS_DID_CLK	128	LVDS_BLC_CLK	197	GND	198	GND
129	CAN0_TX (N/C)	130	CAN0_RX (N/C)	199	SPI_MOSI	200	SPI_CS0#
131	DP1_TX3_P	132	SDVO_INT+ (N/C)	201	SPI_MISO	202	SPI_CS1# (N/C)
133	DP1_TX3_N	134	SDVO_INT- (N/C)	203	SPI_SCLK	204	CRT_RED
135	GND	136	GND	205	VCC_5V_SB	206	VCC_5V_SB
137	DP1_TX1_P	138	DP1_AUX_C_P	207	CRT_VSYNC	208	CRT_GREEN
139	DP1_TX1_N	140	DP1_AUX_C_N	209	CRT_HSYNC	210	CRT_BLUE
141	GND	142	GND	211	+5V	212	+5V
143	DP1_TX2_P	144	SDVO_TVCLKIN+ (N/C)	213	+5V	214	+5V
145	DP1_TX2_N	146	SDVO_TVCLKIN- (N/C)	215	+5V	216	+5V
147	GND	148	GND	217	+5V	218	+5V
149	DP1_TX0_P	150	DP1_AUX_N	219	+5V	220	+5V
151	DP1_TX0_N	152	DP1_AUX_P	221	+5V	222	+5V
153	HDMI_HPD#	154	DP_HPD#	223	+5V	224	+5V
155	PCIE_CLK_REF+	156	PCIE_WAKE#	225	+5V	226	+5V
157	PCIE_CLK_REF-	158	PCIE_RST#	227	+5V	228	+5V
159	GND	160	GND	229	+5V	230	+5V
161	PCIE3_TX+	162	PCIE3_RX+				
163	PCIE3_TX-	164	PCIE3_RX-				
165	GND	166	GND				
167	PCIE2_TX+	168	PCIE2_RX+				
169	PCIE2_TX-	170	PCIE2_RX-				
171	EXCD0_PERST#	172	EXCD1_PERST#				
173	PCIE1_TX+	174	PCIE1_RX+				
175	PCIE1_TX-	176	PCIE1_RX-				
177	EXCD0_CPPE#	178	EXCD1_CPPE#				
179	PCIE0_TX+	180	PCIE0_RX+				
181	PCIE0_TX-	182	PCIE0_RX-				
183	GND	184	GND				
185	LPC_AD0	186	LPC_AD1				
187	LPC_AD2	188	LPC_AD3				
189	LPC_CLK	190	LPC_FRAME#				
191	SERIRQ	192	LPC_LDRQ#				

This page is intentionally left blank.

Chapter 3

Hardware Installation

3.1. Install the CPU Board

To install the CPU board to a carrier board:

1. Assemble a heat sink or a heat spreader to the CPU board.
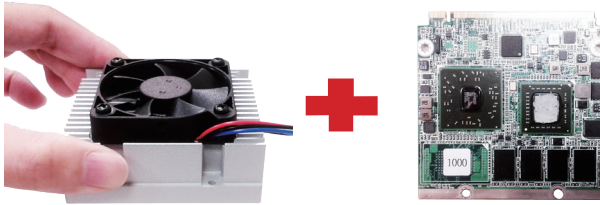
The installation hereinafter is demonstrated using a heat sink.
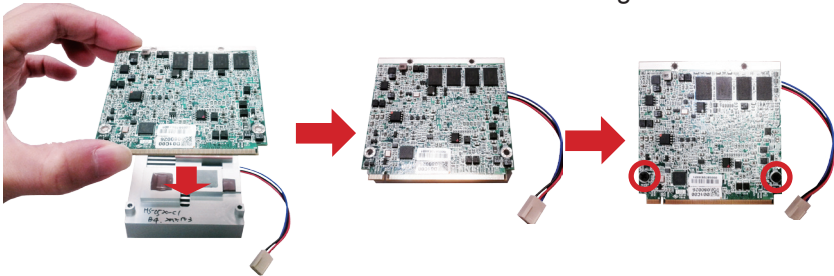
2. Confront the CPU board's edge connector with the carrier board's MXM connector. Align the CPU board edge connector notch with the MXM connector break.

The carrier board's MXM connector

The CPU board's edge connector

MXM connector break

CPU board edge connector notch
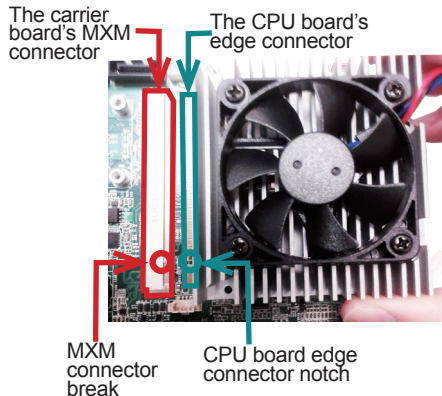
3. Plug the CPU board to the carrier board's MXM connector by a slanted angle. Note the notch on the CPU board's edge connector should meet the MXM connector's break. Fully plug the CPU board.

Fully plug the CPU board.

MXM connector break

CPU board edge connector notch
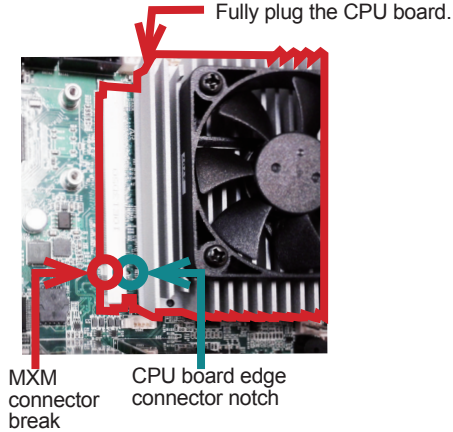
4. Fix the CPU board to the carrier board by using two screws.
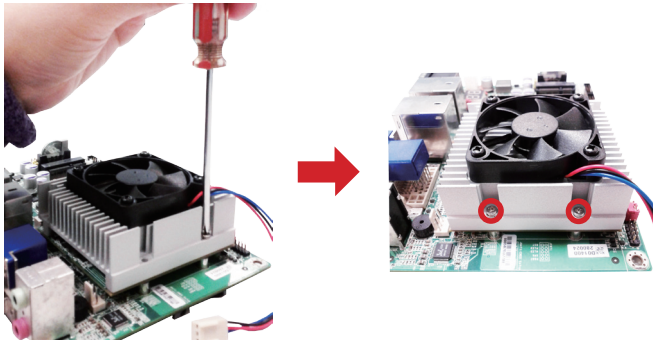
5. Connect the fan to the onboard power source.

Connect the fan to the onboard power connector.
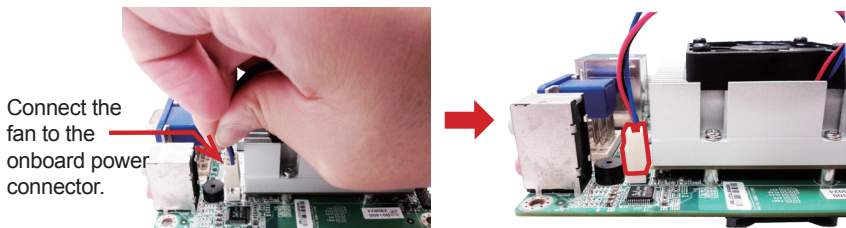
3.1.1. Installation Note

Please note the following when installing the CPU board to a carrier board.

Correct Installation

Plug the CPU board evenly to the MXM connector on the carrier board, with an angle of 20°.
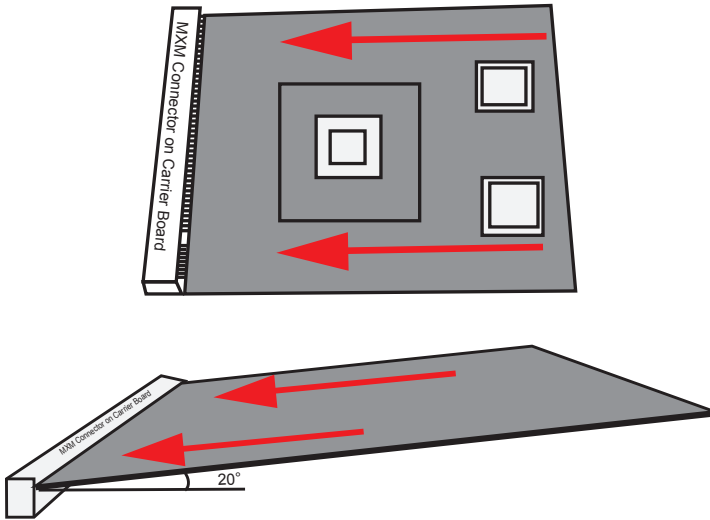
Wrong Installation

Plugging the CPU board inclined to left or right is wrong. This may peel off the plastic positioning post and cause PIN shift or further malfunction.
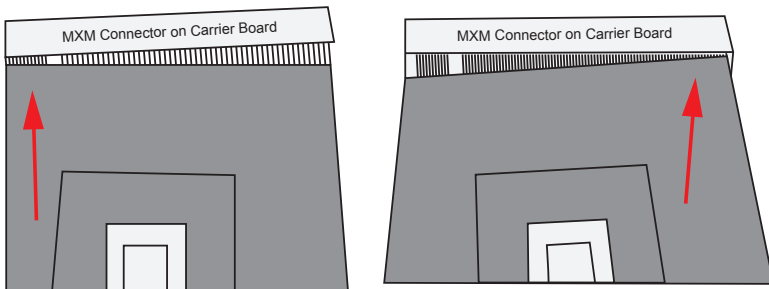
Chapter 4

BIOS

The BIOS Setup utility is featured by American Megatrends Inc to control BIOS settings and configure various system features. The system settings are stored in the system's BIOS ROM. And the BIOS is activated once the computer powers on.

Note the BIOS features in this chapter are described based on the CPU board working with ARBOR evaluation carrier board PBQ-3000.

- **Access BIOS Setup:**

    To access the BIOS Setup, follow through the steps below:

    1. Connect the QSM-520E to a monitor.
    2. Turn on the monitor.
    3. Supply power to the QSM-520E.
    4. Continuously press the **Delete** key once the computer powers on.

    Normally it is the **Main** menu that shows once the BIOS Setup utility opens. Whatever menu or submenu is selected thereafter, the menu or submenu is presented in two panes onscreen. The left pane displays all the settings that are accessible to users while the right pane shows the setting direction. Each menu offers some settings. When a setting is selected on the left pane, it becomes highlighted in white. Available settings are enclosed in brackets while the non-setting are presented in dark gray.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
BIOS Information	Choose the system default
BIOS Vendor American Megatrands	language
Core Version 4.6.5.1	
Compliancy UEFI 2.3; PI 1.2	
Project Version QSM-520E 1.01	
Build Date and Time 11/30/2012 18:48:20	
Memory Information	
Total Memory 2032 MB (DDR3)	
System Language [English]	→←: Select Screen
	↑↓: Select Item
System Date [Wed 01/02/2008]	Enter : Select
System Time [23:58:41]	+/-: Change Opt.
	F1: General Help
Access Level Administrator	F2: Previous Values
	F9: Optimized Defaults
	F10: Save & Exit
	ESC: Exit
Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.	

- **Key Commands**

The BIOS Setup utility relies on a keyboard to receive user's instructions. Hit the following keys to use the utility.

Keystroke	Function
← →	Moves left/right between the top menus.
↓ ↑	Moves up/down between highlight items.
Enter	Selects an highlighted item/field.
Esc	On the top menus: ► Hit **Esc** to quit the utility without saving changes to the BIOS settings. (The screen will prompt a message asking you to select **OK** to confirm or **Cancel** to return to the BIOS settings. On the submenus: ► Hit **Esc** to quit current screen and return to the top menu.
Page Up / +	Increases current value to the next higher value or switches between available options.
Page Down / -	Decreases current value to the next lower value or switches between available options.
F1	Opens the **Help** of the BIOS Setup utility.
F10	Exits the utility saving the changes that have been made. (The screen then prompts a message asking you to select **OK** to confirm or **Cancel** to return to the BIOS settings.)

Note the "WARNING" that shows at the left pane onscreen when making any change to the BIOS settings.

- **The Menus**

The QSM-520E features the BIOS Setup with six menus, which are explicated hereafter in this chapter.

Menu	Description
Main	See 4.1. Main on page 20.
Advanced	See 4.2. Advanced on page 21.
Chipset	See 4.3. Chipset on page 26.
Boot	See 4.4. Boot on page 33.
Security	See 4.5. Security on page 34.
Save & Exit	See 4.6. Save & Exit on page 35.

4.1. Main

The **Main** menu displays some important BIOS info and memory info. It also features the settings of **System Date** and **System Time**.

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Main  Advanced  Chipset  Boot  Security  Save & Exit

  BIOS Information                                     Choose the system default
  BIOS Vendor               American Megatrands        language
  Core Version              4.6.5.1
  Compliancy                UEFI 2.3; PI 1.2
  Project Version           QSM-520E 1.01
  Build Date and Time       11/30/2012 18:48:20

  Memory Information
  Total Memory              2032 MB (DDR3)

  System Language           [English]                  →←:  Select Screen
                                                       ↑↓:  Select Item
  System Date               [Wed 01/02/2008]           Enter :  Select
  System Time               [23:58:41]                 +/-:  Change Opt.
                                                       F1:  General Help
  Access Level              Administrator              F2:  Previous Values
                                                       F9:  Optimized Defaults
                                                       F10:  Save & Exit
                                                       ESC:  Exit


                Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.
```

The displayed info is:

Group	Info	Description
BIOS Information	**BIOS Vendor**	Delivers the provider of the BIOS Setup utility.
	Core Version	Delivers the version of the core.
	Compliancy	Delivers the UEFI support.
	Project Version	Delivers the computer's BIOS version.
	Build Date and Time	Delivers the date and time the BIOS Setup utility was made/ updated.
Memory Information	**Total Memory**	Delivers the onboard DDR3L memory capacity.
Access Level	**Administration**	Delivers the level by which the BIOS Setup utility is being accessed at the moment. ► The QSM-520E comes with the administrator level only.

The featured settings are:

Setting	Description
System Language	The system language is set to **English** and cannot be changed.
System Time	Sets system time.
System Date	Sets system date.

4.2. Advanced

Use the **Advanced** menu to control the system's PCI, ACPI, IDE, USB and Super I/O.

```
           Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main  Advanced  Chipset  Boot  Security  Save & Exit

                                                         Enable or Disable Boot Option
   Legacy OpROM Support                                  for Legacy Network Devices.
   Launch PXE OpROM              [Disabled]
   Launch Storage OpROM          [Enabled]
   Launch Video OpROM            [Enabled]

   ▶ PCI Subsystem Settings
   ▶ ACPI Settings
   ▶ IDE Configuration                                   →←:   Select Screen
   ▶ USB Configuration                                   ↑↓:   Select Item
   ▶ F81866 Super IO Configuration                       Enter :   Select
   ▶ F81866 H/W Monitor                                  +/-:   Change Opt.
                                                         F1:   General Help
                                                         F2:   Previous Values
                                                         F9:   Optimized Defaults
                                                         F10:   Save & Exit
                                                         ESC:   Exit

           Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.
```
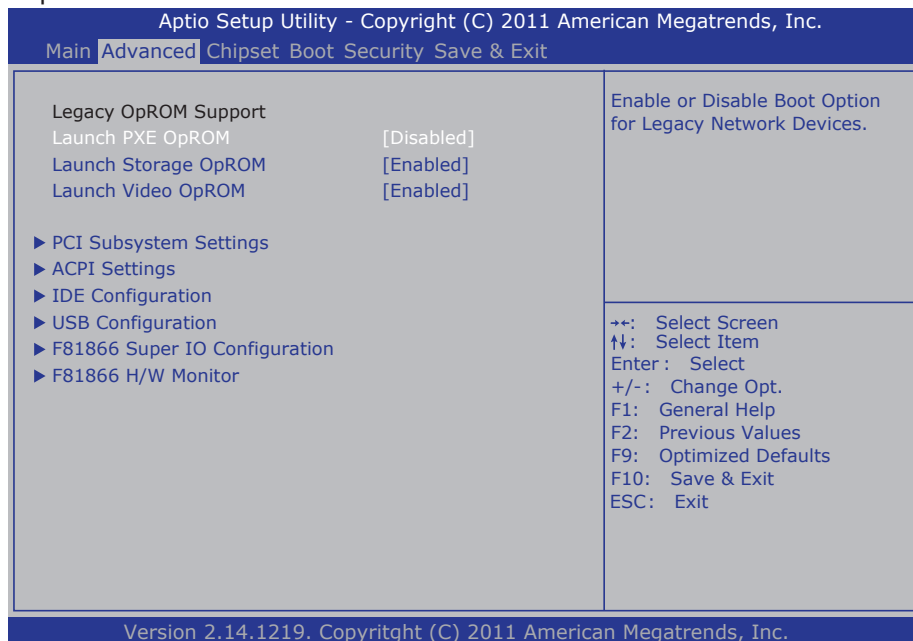
The featured settings and submenus are:

Setting		Description
Legacy OpROM Support	**Launch PXE OpROM**	Enables/disables the boot option for legacy network devices. ► **Disabled** is the default ► "PXE" means "Preboot Execution Environment", a series of methods to get a typical Windows-based computer to boot up without a hard drive or boot diskette.
	Launch Storage OpROM	Enables/disables running the legacy option ROM for video devices. ► **Enabled** is the default.
	Launch Video OpROM	Enables/disables the boot option for the legacy video devices with option ROM. ► Options available are **Disabled**, **Enabled** (default) and **Enabled when no UEFI driver**. ► Do not disable this setting unless you have video device with UEFI driver. This setting is auto re-enabled if no UEFI video device is available. If the screen goes black after this setting is disabled, reset the system.

PCI Subsystem Settings	See [4.2.1. PCI Subsystem Settings](#) on page [22](#).
ACPI Settings	See [4.2.2. ACPI Settings](#) on page [22](#).
IDE Configuration	See [4.2.3. IDE Configuration](#) on page [23](#).
USB Configuration	See [4.2.4. USB Configuration](#) on page [24](#).
F81866 Super IO Configuration	See [4.2.5. F81866 Super IO Configuration](#) on page [24](#).
F81866 H/W Monitor	See [4.2.6. F81866 H/W Monitor](#) on page [25](#).

4.2.1. PCI Subsystem Settings

This submenu configures PCI, PCI-X and PCI Express.

The featured setting and submenu are:

Setting / Submenu	Description
PCI ROM Priority	Defines the PCI option ROM to launch when there are multiple option ROMs (Legacy and EFI compatible). ► Options available are **Legacy ROM** (default) and **EFI Compatible ROM**.
PCI Express Settings	Sets the ASPM (Active State Power Management) level. ► Set it to **Force L0s** to force all links to L0s state. ► Set it to **Auto** to leave it on BIOS auto configuration. ► Set it to **Disabled** to disable ASPM. (default) ► Note enabling ASPM may cause some PCI-E devices to fail.

4.2.2. ACPI Settings

ACPI Settings configure the system's ACPI (Advanced Configuration and Power Interface). The featured settings are:

Setting	Description
Enable ACPI Auto Configuration	Enables/disables BIOS to/from auto-configuring ACPI . ► **Disabled** is the default.
Enable Hibernation	Enables/disables the system to/from hibernation (OS/S4 Sleep State). ► This setting may not be effective with some OS. ► **Enabled** is the default. ► This setting is available only when **Enable ACPI Auto Configuration** is disabled.
ACPI Sleep State	Sets the highest ACPI sleep state that system enters when the suspend button is hit. ► Options available are **Suspend Disabled** and **S3 (Suspend to RAM)** (default).

4.2.3. IDE Configuration

Select **IDE Configuration** to view the system's status of IDE, i.e. the integrated device interface, a type of disk-drive interface in which the controller electronics reside on the drive itself to eliminate the need for a separate adapter card.

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Chipset  Boot  Security  Save & Exit

    IDE Configuration


    SATA Port 0              Not Present
    SATA Port 1              Not Presetn
    SATA Port 2              GLS85LS1008A C (8.0GB

                                              →←:   Select Screen
                                              ↑↓:   Select Item
                                              Enter :   Select
                                              +/-:   Change Opt.
                                              F1:   General Help
                                              F2:   Previous Values
                                              F9:   Optimized Defaults
                                              F10:   Save & Exit
                                              ESC:   Exit



         Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.
```

4.2.4. USB Configuration

USB Configuration displays the info of the connected USB devices and configures USB parameters. The featured settings are:

Setting	Description
Legacy USB Support	Enables/disables legacy USB support. ► Options available are **Enabled** (default), **Disabled** and **Auto**. ► Select **Auto** to disable legacy support if no USB device are connected. ► Select **Disabled** to keep USB devices available only for EFI applications.
EHCI Hand-off	Enables/disables a workaround for the operating systems that have no EHCI hand-off support. ► **Disabled** is the default.

4.2.5. F81866 Super IO Configuration

F81866 Super IO Configuration is a submenu to configure the system's Super IO chip Fintek F81866 to optimize the serial ports on the system. The featured submenus are:

Submenu	Description	
Serial Port # Configuration	Configures the system's serial ports (COM port). The featured settings are:	
	Setting	**Description**
	Serial Port	Enables/disables the serial port. ► **Enabled** is the default.
	Change Settings	Optimizes the IO address and IRQ info for the serial port. ► This setting is available only when the serial port is enabled. ► Options available are: **IO=3F8h; IRQ=4**; (default) **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**;

4.2.6. F81866 H/W Monitor

F81866 H/W Monitor monitors the CPU board's hardware status. Select it to run a report of the info including system temperatures, fan speed and other voltage info.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit

```
Pc Health Status

System temperature2              : +32ºC
Fan1 Speed                       : 4559 RPM
1.5V                             : +1.504 V
5VSB                             : +5.045 V
5V                               : +5.003 V
12V                              : +11.968 V
```

```
→←:  Select Screen
↑↓:  Select Item
Enter :  Select
+/-:  Change Opt.
F1:  General Help
F2:  Previous Values
F9:  Optimized Defaults
F10:  Save & Exit
ESC:  Exit
```

Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.

4.3. Chipset

This menu configures the system's chipset-specific features that cover bus speed management, graphics and the access to the system memory. The chipset also coordinates the communications with the PCI bus.

```
                  Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Chipset  Boot  Security  Save & Exit

    ▶ North Bridge                                   North Bridge Parameters
    ▶ North Bridge LVDS Config Select
    ▶ South Bridge




                                                     →←:  Select Screen
                                                     ↑↓:  Select Item
                                                     Enter :  Select
                                                     +/-:  Change Opt.
                                                     F1:   General Help
                                                     F2:   Previous Values
                                                     F9:   Optimized Defaults
                                                     F10:  Save & Exit
                                                     ESC:   Exit



                  Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.
```
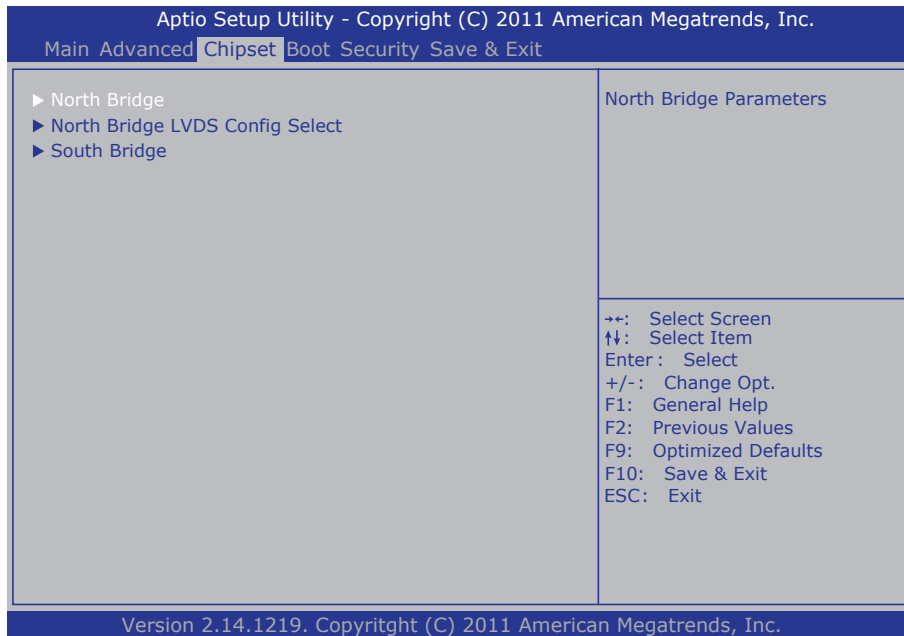
The featured submenus are **North Bridge, North Bridge LVDS Config Select** and **South Bridge** which are explicated in the following of this section.

Submenu	Description
North Bridge	See 4.3.1. North Bridge on page 27.
North Bridge LVDS Config Select	See 4.3.2. North Bridge LVDS Config Select on page 30.
South Bridge	See 4.3.3. South Bridge on page 30.

4.3.1. North Bridge

This submenu configures the system's north bridge features including the graphics, memory and socket 0. This submenu also presents some important memory information.

The featured settings and submenus are:

Setting / Submenu	Description
Primary Video Device	Sets the primary video device for the BIOS to use for output. ► Options available are **IGD** (Internal Graphics Device) **Video**, **NB PCIe slot video** and **SB PCIe slot video**. ► **IGD Video** is the default.
Memory Clock	Sets the frequency for memory clock, or leaves it on BIOS auto-configuration. ► Options available are: **Auto** (default), **400MHz**, **533MHz** and **667MHz**.
Memory Clear	Enables/disables the memory clear functionality. ► Options available are **Not Cleared** (default) and **Cleared**.
GFX Configuration	Configures the system's graphics. See 4.3.1.1. GFX Configuration on page 28 for more details.
Memory Configuration	Configures the system's memory. See 4.3.1.2. Memory Configuration on page 29 for more details.
Socket 0 Information	Views Socket 0-releated information. See 4.3.1.3. Socket 0 Information on page 29 for more details.

The displayed memory info is:

Info	Description
Memory Clock	Delivers the current memory clock frequency.
Total Memory	Delivery the total capacity of the onboard DDR3L memory.

4.3.1.1. GFX Configuration

This submenu features the following settings to configure the system's graphics:

Setting	Description
NB GPP Core Config	Configures the north bridge GPP (general purpose ports) core. ► Options available are: **Disabled**, **GPP_CORE_x4x4**, **GPP_CORE_x4x2x2**, **GPP_CORE_x4x2x1x1** **GPP_CORE_x4x1x1x1x1** (default)
Port # Control	Enables/disables the port. ► Options available are: **Enabled** (default) and **Disabled**. ► When enabled, the followings settings are available: <table><tr><th>Setting</th><th>Description</th></tr><tr><td>**ASPM Mode Control**</td><td>Sets the ASPM level for the port. ► Options available are: **Disabled** (default), **L0s Entry**, **L1 Entry** and **L0s and L1 Entry**. ► ASPM for "Active State Power Management".</td></tr><tr><td>**Hotplug Mode Control**</td><td>Sets the hotplug mode for the port. ► Options available are: **Disabled** (default), **Hotplug Basic**, **Hotplug Server**, **Hotplug Enhanced** and **Hotplug Inboard**.</td></tr><tr><td>**Link Speed**</td><td>Sets the PCIe link speed for the port. ► The link speed may be overwritten by PSPP setting. ► Options available are: **Max Speed** (default), **PCIe Gen1** and **PCIe Gen2**.</td></tr></table>
PSPP Policy	Sets the PSPP (PCIe speed power policy). ► Options available are **Disabled**, **Performance**, **Balanced-High**, **Balanced -Low** (default) and **Power Saving**.

4.3.1.2. Memory Configuration

This submenu features the following settings to configures the system's memory:

Setting	Description
Integrated Graphics	Enables/disables the integrated graphics controller, or leaves it on BIOS auto-configuration. ► Options available are **Auto** (default), **Disabled** and **Force**. ► Select **Force** to enable the integrated graphics controller.
UMA Frame buffer size	Sets the UMA (Unified Memory Architecture) frame buffer size. ► This setting is available only when the **Integrated Graphics** is enabled. ► Options available are **32M**, **64M**, **128M**, **256M** (default), **512M**, **1G** and **2G**.
Bank Interleaving	Enables/disables "bank interleaving", an advanced chipset technology to improve memory performance by masking the refresh cycles of each memory bank. ► **Disabled** is the default.

4.3.1.3. Socket 0 Information

Socket 0 Information enables viewing the CPU's Socket 0 related information such as the starting/ending address and the presence or absence of memory modules in the DIMM slots.

```
          Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Chipset  Boot  Security  Save & Exit

    Socket 0 Information

      Starting Address:  0KB
        Ending Address: 2097151KB


    Dimm0: size = 2048MB,  speed = 667MHz
    Dimm1: Not present
                                                    →←:  Select Screen
                                                    ↑↓:  Select Item
                                                    Enter :  Select
                                                    +/-:  Change Opt.
                                                    F1:  General Help
                                                    F2:  Previous Values
                                                    F9:  Optimized Defaults
                                                    F10:  Save & Exit
                                                    ESC:  Exit



          Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.
```

4.3.2. North Bridge LVDS Config Select

This submenu features the following settings to configure the INT15 options for the LVDS:

Setting	Description
DP0 Output Mode	Sets the display type for display port 0, the internal LCD panel. ► Options available are **LVDS** (defautl) and **Disabled**.
DP1 Output Mode	Sets the display type for display port 1, the extended display. ► Options available are **Single Link DVI-D** (defautl) and **Disabled**.

LVDS Resolution	Sets the resolution for LVDS.
	► Options available are:
	    LVDS Option 1 640 x 480 18Bit Single
	    LVDS Option 2 800 x 600 18Bit Single
	    LVDS Option 3 1024x 600 18Bit Single
	    LVDS Option 4 1024 x 768 18Bit Single (defautl)
	    LVDS Option 5 1280 x 720 18Bit Single
	    LVDS Option 6 1280 x 800 18Bit Single
	    LVDS Option 7 1366 x 768 18Bit Single
	    LVDS Option 8 1440 x 900 18Bit Single
	    LVDS Option 9 1366 x 768 24Bit Single
	    LVDS Option 10 1440 x 900 24Bit Single
	    LVDS Option 11 1280 x 1024 24Bit Dual
	    LVDS Option 12 1440 x 1050 24Bit Dual
	    LVDS Option 13 1600 x 900 24Bit Dual
	    LVDS Option 14 1680 x 1050 24Bit Dual
	    LVDS Option 15 1600 x 1200 24Bit Dual
	    LVDS Option 16 1920 x 1080 24Bit Dual

4.3.3. South Bridge

Select this submenu to view the south bridge's CIM version and to configures its features.

The delivered info and featured settings are:

Info / Setting	Description
SB CIM Version	Delivers the south bridge's CIM version. ► CIM for "Common Interface Module".
SB SATA Configuration	Configures the system's SATA feature. See 4.3.3.1. SB SATA Configuration on page 31.
SB USB Configuration	Configures the system's USB feature. See 4.3.3.2. SB USB Configuration on page 32.

4.3.3.1. SB SATA Configuration

Use this submenu to configure the system's SATA feature by the following settings:

Setting	Description
OnChip SATA Channel	Enables/disables the Serial ATA feature. ► **Enabled** is the default.
OnChip SATA Type	Sets the storage type for the Serial ATA interface. ► Options available are **RAID**, **AHCI** and **Legacy IDE** (default). ► This setting is available only when **OnChip SATA Channel** is enabled.
SATA IDE Combined Mode	Enables/disables supporting both SATA and PATA devices. . ► **Enabled** is the default. ► This setting is available only when **OnChip SATA Channel** is enabled.
Combined Mode Option	Sets how to support both SATA and PATA by defining which is the primary drive. ► Options available are **SATA as primary** (default) and **SATA as secondary**. ► This setting is available only when both **OnChip SATA Channel** and **SATA Combined Mode** are enabled and **OnChip SATA Type** isn't set to **AHCI**.

4.3.3.2. SB USB Configuration

Use this submenu to configure the system's USB feature by the following settings:

Setting	Description
OHCI HC (BUS 0 Dev 18 Fn 0)	Enables/disables OHCI HC (Bus 0 Dev 18 Fn 0) ► OHCI means "Open Host Controller Interface", an interface that enables a computer host to interface with USB or FireWire hardware. ► **Enabled** is the default.
OHCI HC (BUS 0 Dev 19 Fn 0)	Enables/disables OHCI HC (Bus 0 Dev 19 Fn 0) ► **Enabled** is the default.
OHCI HC (BUS 0 Dev 22 Fn 0)	Enables/disables OHCI HC (Bus 0 Dev 22 Fn 0). ► **Enabled** is the default.
OHCI HC (BUS 0 Dev 20 Fn 5)	Enables/disables OHCI HC (Bus 0 Dev 20 Fn 5). ► **Enabled** is the default.

4.4. Boot

The **Boot** menu configures how to boot up the system by defining boot device priority.

```
           Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Chipset  Boot  Security  Save & Exit

    Boot Configuration                                Number of seconds to wait for
    Setup Prompt Timeout            1                 setup activation key.
    Bootup NumLock State            [On]              65535 (oxFFFF) means indefinite
                                                      waiting.

    Boot Option Priorities
    Boot Option #1                  [SATA PS: GLS85LS1 ...]

    Hard Drive BBS Priorities
                                                      →←:  Select Screen
                                                      ↑↓:  Select Item
                                                      Enter :  Select
                                                      +/-:  Change Opt.
                                                      F1:   General Help
                                                      F2:   Previous Values
                                                      F9:   Optimized Defaults
                                                      F10:  Save & Exit
                                                      ESC:  Exit

           Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.
```

The featured settings are:

Group	Setting	Description
Boot Configuration	**Setup Prompt Timeout**	Sets how long to show the prompt to enter BIOS Setup. ► Sets it to 65535 to show the prompt indefinitely.
	Bootup NumLock State	Sets keyboard's NumLock state when the system boots up. ► Options available are **On** (default) and **Off**.
Boot Option Priority	**Boot Option #1**	Sets the very 1st boot device among the available device types. ► Option(s) available are the available device type(s).
Hard Drive BBS Priorities		Sets hard drive boot priority. ► BBS for "BIOS Boot Specification". ► Options available are the built-in hard drive (the default) and **Disabled**.

4.5. Security

The **Security** menu sets up an administrator password to limit the access to the BIOS Setup utility. Users will be asked for such password each time he/she tries to access the BIOS Setup utilities.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or entre Setup. In Setup the User will have Administrator rights. The password length must be in the following range: Minimum length 3 Maximum length 20 Administrator Password	Set Administrator Password →←: Select Screen ↑↓: Select Item Enter : Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.	

The featured setting is:

Setting	Description
Administrator Password	To set up an administrator password: 1. Select **Administrator Password**. The screen then pops up an **Create New Password** dialog. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters. 3. Hit [Enter] key to submit.

4.6. Save & Exit

The **Save & Exit** menu features a handful of commands to launch actions from the BIOS Setup utility regarding saving changes, quitting the utility and recovering defaults.

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main  Advanced  Chipset  Boot  Security  Save & Exit

   Save Changes and Exit                        Restore/Load Default values
   Restore Defaults                             for all the setup options.

   Boot Override
   SATA PS: GLS85LS1008A CS 08GB

                                                →←:  Select Screen
                                                ↑↓:  Select Item
                                                Enter :  Select
                                                +/-:  Change Opt.
                                                F1:  General Help
                                                F2:  Previous Values
                                                F9:  Optimized Defaults
                                                F10:  Save & Exit
                                                ESC:  Exit

         Version 2.14.1219. Copyritght (C) 2011 American Megatrends, Inc.
```
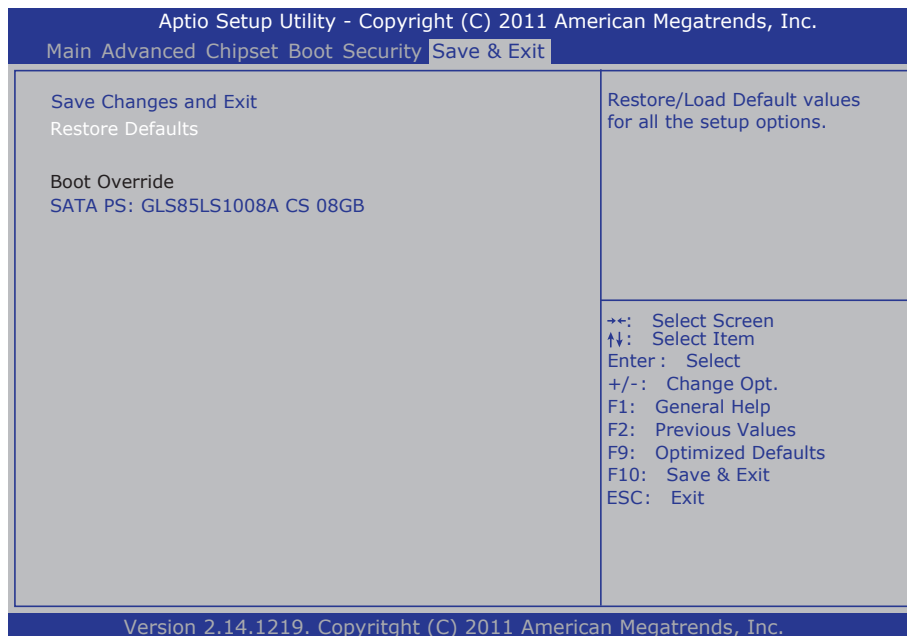
The featured settings are:

Setting	Description
Save Changes and Reset	Saves the changes and resets the system. ► This is a command to launch action from the BIOS Setup utility rather than a setting.
Restore Defaults	Restores all settings to factory defaults. ► This is a command to launch action from the BIOS Setup utility rather than a setting.
Boot Override	Shows a list of the available boot devices in the system so users can boot up the system immediately by any of the listed devices regardless of the currently configured boot priority. ► This is a command to launch action from the BIOS Setup utility rather than a setting.

This page is intentionally left blank.

Appendices

A: I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the available I/O port addresses in the system.

Address	Device Description
0x00000000-0x000003AF	PCI bus
0x00000000-0x000003AF	Motherboard resources
0x00000000-0x000003AF	Direct memory access controller
0x000003B0-0x000003DF	PCI bus
0x000003B0-0x000003DF	AMD Radeon HD 6250 Graphics
0x000003E0-0x00000CF7	PCI bus
0x00000D00-0x0000FFFF	PCI bus
0x0000F000-0x0000F0FF	AMD Radeon HD 6250 Graphics
0x000003C0-0x000003DF	AMD Radeon HD 6250 Graphics
0x0000E000-0x0000EFFF	PCI standard PCI-to-PCI bridge
0x0000E000-0x0000EFFF	Intel(R) 82583V Gigabit Network Connection
0x0000D000-0x0000DFFF	PCI standard PCI-to-PCI bridge
0x0000D000-0x0000DFFF	Realtek PCIe GBE Family Controller
0x0000F150-0x0000F15F	Standard Dual Channel PCI IDE Controller
0x000001F0-0x000001F7	Primary IDE Channel
0x000003F6-0x000003F6	Primary IDE Channel
0x00000170-0x00000177	Primary IDE Channel
0x00000376-0x00000376	Primary IDE Channel
0x0000F140-0x0000F147	Standard Dual Channel PCI IDE Controller
0x0000F130-0x0000F133	Standard Dual Channel PCI IDE Controller
0x0000F120-0x0000F127	Standard Dual Channel PCI IDE Controller
0x0000F110-0x0000F113	Standard Dual Channel PCI IDE Controller
0x0000F100-0x0000F10F	Standard Dual Channel PCI IDE Controller
0x00000A79-0x00000A79	ISAPNP Read Data Port
0x00000279-0x00000279	ISAPNP Read Data Port
0x00000274-0x00000277	ISAPNP Read Data Port
0x0000040B-0x0000040B	Motherboard resources
0x000004D6-0x000004D6	Motherboard resources

Address	Device Description
0x00000C00-0x00000C01	Motherboard resources
0x00000C14-0x00000C14	Motherboard resources
0x00000C50-0x00000C51	Motherboard resources
0x00000C52-0x00000C52	Motherboard resources
0x00000C6C-0x00000C6C	Motherboard resources
0x00000C6F-0x00000C6F	Motherboard resources
0x00000CD0-0x00000CD1	Motherboard resources
0x00000CD2-0x00000CD3	Motherboard resources
0x00000CD4-0x00000CD5	Motherboard resources
0x00000CD6-0x00000CD7	Motherboard resources
0x00000CD8-0x00000CDF	Motherboard resources
0x00000800-0x0000089F	Motherboard resources
0x00000B20-0x00000B3F	Motherboard resources
0x00000900-0x0000090F	Motherboard resources
0x00000910-0x0000091F	Motherboard resources
0x0000FE00-0x0000FEFE	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000E00-0x00000E0F	Motherboard resources
0x00000060-0x00000060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00000064-0x00000064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003E8-0x000003EF	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)
0x00000020-0x00000021	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x00000081-0x00000083	Direct memory access controller
0x00000087-0x00000087	Direct memory access controller
0x00000089-0x0000008B	Direct memory access controller
0x0000008F-0x0000008F	Direct memory access controller
0x000000C0-0x000000DF	Direct memory access controller

Address	Device Description
0x00000040-0x00000043	System timer
0x00000070-0x00000071	System CMOS/real time clock
0x00000061-0x00000061	System speaker
0x00000010-0x0000001F	Motherboard resources
0x00000022-0x0000003F	Motherboard resources
0x00000044-0x0000005F	Motherboard resources
0x00000062-0x00000063	Motherboard resources
0x00000065-0x0000006F	Motherboard resources
0x00000072-0x0000007F	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000084-0x00000086	Motherboard resources
0x00000088-0x00000088	Motherboard resources
0x0000008C-0x0000008E	Motherboard resources
0x00000090-0x0000009F	Motherboard resources
0x000000A2-0x000000BF	Motherboard resources
0x000000E0-0x000000EF	Motherboard resources
0x000004D0-0x000004D1	Motherboard resources
0x000000F0-0x000000FF	Numeric data processor

B: BIOS Memory Map

Address	Device Description
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	AMD Radeon HD 6250 Graphics
0xC0000-0xDFFFF	PCI bus
0x7F000000-0xFFFFFFFF	PCI bus
0x67000000-0x7EFFFFFF	Motherboard resources
0xC0000000-0xCFFFFFFF	AMD Radeon HD 6250 Graphics
0xFEB00000-0xFEB3FFFF	AMD Radeon HD 6250 Graphics
0xFEB44000-0xFEB47FFF	Microsoft UAA Bus Driver for HighDefinition Audio
0xFE900000-0xFEAFFFFF	PCI standard PCI-to-PCI bridge
0xFE900000-0xFEAFFFFF	Intel(R) 82583V Gigabit Network Connection
0xFEA40000-0xFEA5FFFF	Intel(R) 82583V Gigabit Network Connection
0xFEA60000-0xFEA63FFF	Intel(R) 82583V Gigabit Network Connection
0xD0000000-0xD00FFFFF	PCI standard PCI-to-PCI bridge
0xD0000000-0xD00FFFFF	Realtek PCIe GBE Family Controller
0xD0004000-0xD0004FFF	Realtek PCIe GBE Family Controller
0xFEB4F000-0xFEB4F3FF	Standard Dual Channel PCI IDE Controller
0xFEB4E000-0xFEB4EFFF	Standard OpenHCD USB Host Controller
0xFEB4D000-0xFEB4D0FF	Standard Enhanced PCI to USB Host Controller
0xFEB4C000-0xFEB4CFFF	Standard OpenHCD USB Host Controller
0xFEB4B000-0xFEB4B0FF	Standard Enhanced PCI to USB Host Controller
0xFEB40000-0xFEB43FFF	Microsoft UAA Bus Driver for High Definition Audio
0xFEC00000-0xFEC00FFF	Motherboard resources
0xFEE00000-0xFEE00FFF	Motherboard resources
0xFED80000-0xFED8FFFF	Motherboard resources
0xFED61000-0xFED70FFF	Motherboard resources
0xFEC10000-0xFEC10FFF	Motherboard resources
0xFED00000-0xFED00FFF	Motherboard resources
0xFED00000-0xFED00FFF	High Precision Event Timer, HPET
0xFFC00000-0xFFFFFFFF	Motherboard resources
0xFEB4A000-0xFEB4AFFF	Standard OpenHCD USB Host Controller
0xFEB49000-0xFEB49FFF	Standard OpenHCD USB Host Controller
0xFEB48000-0xFEB480FF	Standard Enhanced PCI to USB Host Controller
0xE0000000-0xEFFFFFFF	System board

C: Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 9	Microsoft ACPI-Compliant System
IRQ 18	AMD Radeon HD 6250 Graphics
IRQ 18	PCI standard PCI-to-PCI bridge
IRQ 18	Intel(R) 82583V Gigabit Network Connection
IRQ 18	Standard OpenHCD USB Host Controller
IRQ 18	Standard OpenHCD USB Host Controller
IRQ 18	Standard OpenHCD USB Host Controller
IRQ 18	Standard OpenHCD USB Host Controller
IRQ 19	Microsoft UAA Bus Driver for High Definition Audio
IRQ 19	PCI standard PCI-to-PCI bridge
IRQ 19	Realtek PCIe GBE Family Controller
IRQ 16	PCI standard PCI-to-PCI bridge
IRQ 16	Microsoft UAA Bus Driver for High Definition Audio
IRQ 14	Primary IDE Channel
IRQ 17	Standard Enhanced PCI to USB Host Controller
IRQ 17	Standard Enhanced PCI to USB Host Controller
IRQ 17	Standard Dual Channel PCI IDE Controller
IRQ 17	Standard Enhanced PCI to USB Host Controller
IRQ 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
IRQ 12	Microsoft PS/2 Mouse
IRQ 4	Communications Port (COM1)
IRQ 3	Communications Port (COM2)
IRQ 10	Communications Port (COM3)
IRQ 10	Communications Port (COM4)
IRQ 0	System timer
IRQ 8	System CMOS/real time clock
IRQ 13	Numeric data processor

This page is intentionally left blank.