

User Manual

SOM-6897

COM Express Compact Module



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Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For outof-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

- 1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
- 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
- 3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
- 4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
- 5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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Declaration of Conformity

CE

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.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FM

This equipment has passed the FM certification. According to the National Fire Protection Association, work sites are classified into different classes, divisions and groups, based on hazard considerations. This equipment is compliant with the specifications of Class I, Division 2, Groups A, B, C and D indoor hazards.

Technical Support and Assistance

- 1. Visit the Advantech website at http://support.advantech.com where you can find the latest information about the product.
- 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Warnings, Cautions and Notes



Warning! Warnings indicate conditions, which if not observed, can cause personal injury!





Caution! Cautions are included to help you avoid damaging hardware or losing data. e.g.

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note!

Notes provide optional additional information.

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to: support@advantech.com

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- SOM-6897 CPU module
- 1 x Heatspreader (1960069307N001)

Safety Instructions

- 1. Read these safety instructions carefully.
- 2. Keep this User Manual for later reference.
- 3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- 4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
- 5. Keep this equipment away from humidity.
- 6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
- 7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- 8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- 9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- 10. All cautions and warnings on the equipment should be noted.
- 11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- 12. Never pour any liquid into an opening. This may cause fire or electrical shock.
- 13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
- 14. If one of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well, or you cannot get it to work according to the user's manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
- 15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
- 16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

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General Information

This chapter gives background information on the SOM-6897 CPU Computer on Module. Sections include:

- Introduction
- Specification
- Functional Block Diagram

1.1 Introduction

SOM-6897 is a COM Express Compact module with pin-out Type 6 that fully complies with the PICMG (PCI Industrial Computer Manufactures Group) COM.0 R2.1 specification. The CPU module uses an Intel 6th Generation Core i processor and other peripheral chips to fulfill a basic size 95x95mm COM Express form factor. SOM-6897 features a 15 watt TDP and is equipped with a power-saving ULV-SoC on new 14nm micro architecture. It brings 15% performance improvements and 20% improvements on 3D graphics over previous models. SOM-6897 is equipped with the integrated Intel Gen 9 graphics micro architecture, supplying up to three independently operated 4K displays via DisplayPort. It also supports HEVC, VP8, VP9 and VDENC decoding/encoding in hardware. SOM-6897 provides interfaces such as PCI Express Gen 3, SATA Gen 3, and USB3.0. Moreover, 5 PCIe x1 (with LAN) or 1 PCIe x4 and 4 PCIex1 (with LAN) can be supported at a time to make the IO design more flexible. In addition, SOM-6897 added mounting hole around processor to strengthen the board structure and avoid board bending.

Advantech iManager was designed to satisfy a lot of embedded application requirements such as multi-level watchdog timer, voltage and temperature monitoring, and thermal protection through processor throttling, as well as LCD backlight on/off, brightness control, and embedded storage information. Combined with Advantech SUSI Access, it can remotely monitor and control devices via the internet for easy maintenance. All Advantech COM Express modules integrate iManager and SUSI Access to benefit customer's applications. SOM-6897 is suitable for computing intensive, thermal sensitive, graphics/media intense, and I/O demanding applications.

1.2 Specifications

1.2.1 Board Information

- **Pin Definition:** PICMG COM.0 R2.1 Type 6 pin-out definition
- Form Factor: PICMG COM.0 R2.1 Compact Module 95 x 95 mm

1.2.2 System Information

■ CPU: 6th Gen Intel® Core Processors

CPU	Standard Freq.	Max. Turbo Freq.	Core	Cache (MB)	TDP(W)
i7-6600U	2.6GHz	3.4GHz	2	4	15
I5-6300U	2.4GHz	3.0GHz	2	3	15
i3-6100U	2.3GHz	NA	2	3	15
Celeron 3955U	2.0GHz	NA	2	2	15

- Memory: 2 SODIMM Socket for DDR3L-1600, up to 16 GB
- BIOS: AMI UEFI
- Power management: Supports power saving modes including Normal / Standby / Suspend modes. ACPI 2.0 compliant.

1.2.3 Display

Graphic Core: Intel® Gen9 HD Graphic supports DX11.1, OGL4.4, OCL1.2, and MPEG2, AVC/H.264, VC-1 HW decode/encode/transcode acceleration

CPU	Graphics Core	Base Freq.	Max Freq.
i7-4700EQ	Gen9 HD Graphic	300MHz	1000MHz
i5-4400E	Gen9 HD Graphic	100MHz	1000MHz
i5-4402E	Gen9 HD Graphic	100MHz	1000MHz
i3-4100E	Gen9 HD Graphic	100MHz	900MHz

- VGA: Resolution up to 1920 x 1200
- LVDS: Single and dual channel 18/24-bit resolutions up to 1920 x 1200 @ 60 Hz
- **HDMI/DVI/DP:** Supports 3 ports HDMI (default), DVI, or DP multiplexed. Resolution: HDMI up to 4096 x 2160 @24Hz
 - DVI up to 1920 x 1080 @ 60 Hz
 - DP up to 4096 x 2304@60Hz 24bpp
- Dual Display: VGA + LVDS, VGA + HDMI/DVI/DP, LVDS + HDMI/DVI/DP, HDMI/DVI/DP + HDMI/DVI/DP
- Triple Display: LVDS + DP + DP/HDMI, LVDS + DP + VGA, LVDS + HDMI + HDMI, DP + DP + DP, DP + HDMI + HDMI, DVI + DP + HDMI, VGA + DP + HDMI

1.2.4 Expansion Interface

PCI Express x1: Supports default 5 ports PCIe x1 compliant.

To PCIe Gen2* (5.0 GT/s) specification, several configurable combinations may need BIOS modifies. Please contact Advantech sales or FAE for more detail. (PCIe x1 Port #7 option with SATA2)

		PCle #0-3			PCle #4-7			
Option 1	x4			x4				
Option 2	x4			x2		х	(2	
Option 3	x4			х	2	x1	x1	
Option 4	x4		x4		x1	x1	x1	x1
Option 5	×	2	х	2	х	2	х	(2
Option 6	×	(2	х	2	x1	x1	x1	
Default	x1	x1	x1	x1	x1			

- Audio Interface: Intel HD Audio interface
- LPC Bus
- SMBus
- **I2C Bus:** Up to 400KHz
- SPI: Supports SPI BIOS only

1.2.5 I/O

- Ethernet: Intel I219LM Gigabit LAN supports 10/100/1000 Mbps Speed
 - SATA: Supports 3 ports SATA Gen3 (600 Gb/s) (Option with PCIe x1 port #7 can be 4 ports SATA)
- **USB Interface:** Supports 4 ports USB3.0, 8 ports USB 2.0
- **Serial Port:** Supports 2 ports 2-wire serial port
- Express Card: 2 ports
- Panel Control: Supports panel backlight on/off control, brightness control
- Thermal Protection: Supports thermal shutdown or CPU throttling
- Watchdog Timer: 65536 level timer interval, from 0~65535 sec, multi-level, multi-option watchdog timer
- Smart Fan: 1 port on Module, 1 port down to carrier board
- GPIO: 8-bit GPIO
- Hardware Monitor: Vin, 5VSB, CMOS
- **TPM:** BOM option, default not available

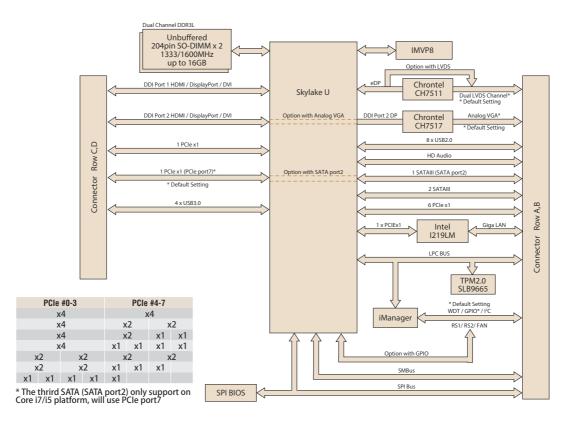
1.2.6 iManager 2.0

Refer to section 4.3.

1.2.7 Mechanical and Environmental Specification

- Dimensions: 95 x 95 mm (3.74" x 3.74")
- Power Type and Supply Voltage:
 - ATX: +8.5~20V and +4.75~5.25VSB (standby power)
 - AT: +8.5~20V
 - CMOS Battery: +3.3V
- Power Requirement:
 - Test condition: SOM-6897C3-U3A1E (i3-6100U), DDR3L-1600 16GB, WIN8.1 64-bit, under 12V and 5VSB input power supply.
 - Idle: 8.5W
 - Max: 41.8W (Burn-in V6.0 Pro)
- Temperature Specification:
 - Operating: $0 \sim 60^{\circ} \text{ C} (32 \sim 140^{\circ} \text{ F})$
 - Storage: -40 ~ 85° C (-40 ~ 185° F)
- Humidity Specification:
 - Operating: 40° C @ 95% relative humidity, non-condensing
 - Storage: 60° C @ 95% relative humidity, non-condensing

1.3 Functional Block Diagram





Mechanical Information

This chapter gives mechanical information on the SOM-6897 CPU Computer on Module.

- Sections include:
- Board Information
- Mechanical Drawing
- Assembly Drawing

2.1 Board Information

The figures below indicate the main chips on SOM-6897 Computer-on-Module. Please aware of these positions while designing your own carrier board to avoid mechanical issues, as well as designing thermal solution contact points for best thermal dissipation performance.

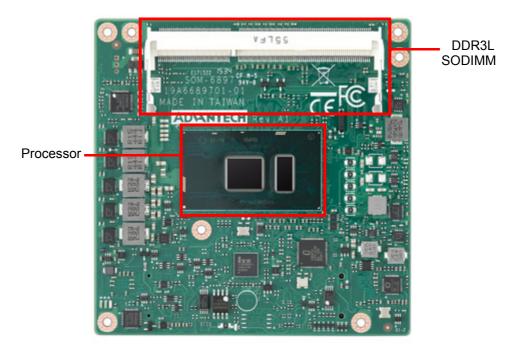


Figure 2.1 Board Chips Identify - Front

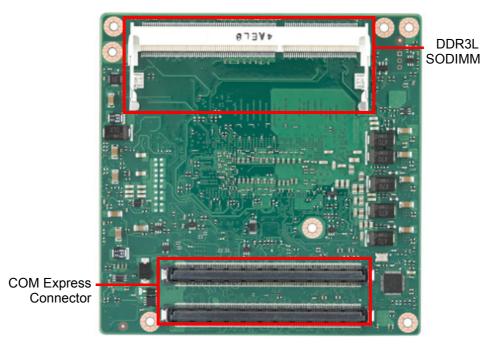


Figure 2.2 Board Chips Identify - Back

2.2 Mechanical Drawing

For more details about 2D/3D models, please look on the Advantech COM support service website http://com.advantech.com.



Figure 2.3 Board Mechanical Drawing - Front

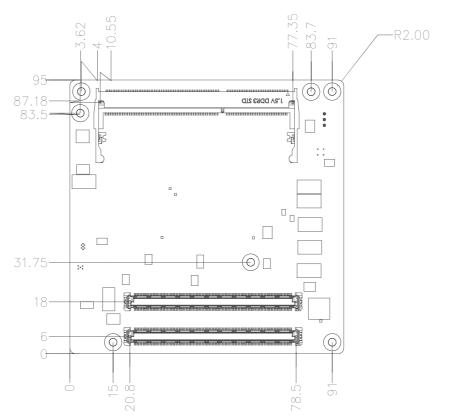


Figure 2.4 Board Mechanical Drawing - Back

2.3 Assembly Drawing

These figures demonstrate the assembly order from the thermal module, COM module to the carrier board.

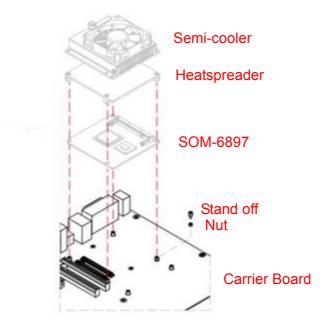


Figure 2.5 Assembly Drawing (For Reference Only)

There are 3 reserved screw holes for SOM-6897 to be pre-assembled with the heat spreader.



BIOS Operation

This chapter gives BIOS setup information for the SOM-6897 CPU Computer on Module.

- Sections include:
- Introduction
- Entering Setup
- Hot / Operation Key
- Exit BIOS Setup Utility

3.1 Entering Setup

SOM-6897 BIOS has been stored into a flash ROM which is inserted into a BIOS socket on the board. With the BIOS Setup program, users can modify BIOS settings and control various system features. This chapter describes the basic navigation of the SOM-6897 BIOS setup screens.

Advantech will have revisions for product optimization, and users can re-flash the latest BIOS through the AFU utility. Please contact to Advantech sales or FAE for more details.

Turn on the computer and then press <ESC> or to enter Setup menu.

Aptio Setup Utility – Main Advanced Chipset Security	Copyright (C) 2016 American Boot Save & Exit	Megatrends, Inc.
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level System Language System Date System Time	American Megatrends 5.0.1.1 0.30 x64 UEFI 2.4.0; PI 1.3 SOM 68970000560X032 03/18/2016 11:57:43 Administrator [English] [Wed 01/27/2016] [23:11:22]	Choose the system default language
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Co	pyright (C) 2016 American M	egatrends, Inc.

SOM-6897 BIOS has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in flash ROM so it retains the Setup information when the power is turned off.

3.1.1 Main Setup

When users first enter the BIOS Setup Utility, they will enter the main setup screen. Users can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS setup screen is shown below.

BIOS Information BIOS Vendor Core Version Compliancy	American Megatrends	Choose the system default
Project Version Build Date and Time Access Level System Language System Date System Time	5.0.1.1 0.30 x64 UEFI 2.4.0; PI 1.3 SOM 68970000S60X032 03/18/2016 11:57:43 Administrator [English] [Wed 01/27/2016] [23:11:22]	language
		<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

System time / System date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields.

- System Date: mm/dd/yyyy
- System Time: hh/mm/ss

3.1.2 Advanced BIOS Features Setup

Select the Advanced tab from the SOM-6897 setup screen to enter the Advanced BIOS Setup screen. Users can select any item in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. Users can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages.

Aptio Setup Utility – Copyright (C) 2016 America Main Advanced Chipset Security Boot Save & Exit	an Megatrends, Inc.
Trusted Computing ACPI Settings AMT Configuration PCH-FW Configuration W83627DHG Super ID Configuration iManager Configuration Serial Port Console Redirection CPU Configuration SATA Configuration Network Stack Configuration CSM Configuration USB Configuration	Trusted Computing Settings ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American	Megatrends, Inc.

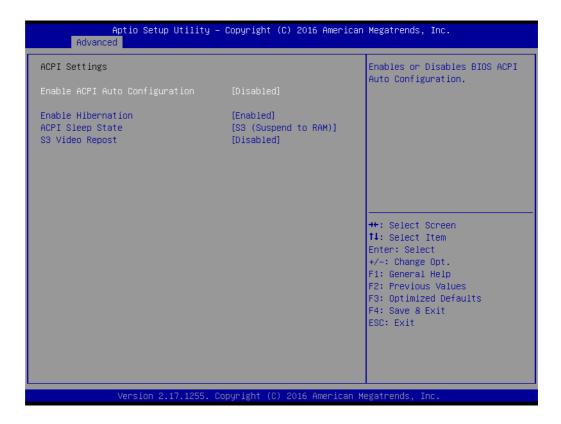
3.1.2.1 Trusted Computing

NO Security Device Found 0.S. will not show Security Device. TCG EFI protocol and	Aptio Setup Utilit Advanced	y – Copyright (C) 2016 f	American Megatrends, Inc.
11: Select ItemEnter: Select+/-: Change Opt.F1: General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & Exit	Security Device Support	[Disable]	support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be
			t↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit

Security Device Support

Enables or Disables BIOS support for security devices. OS will not show security device. TCG EFI protocol and INT1A interface will not be available.

3.1.2.2 ACPI Settings



Enable ACPI Auto Configuration

This item allows users to enable or disable BIOS ACPI auto configuration.

Enable Hibernation

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

ACPI Sleep State

This item allows users to select the highest ACPI sleep state the system will enter when the suspend button is pressed.

S3 Video Repost

This item allows users to enable or disable S3 Video Repost.

3.1.2.3 AMT Configuration

Advanced		
Intel AMT	[Enabled]	Enable/Disable Intel (R)
BIOS Hotkey Pressed	[Disabled]	Active Management Technology
MEBx Selection Screen	[Disabled]	BIOS Extension.
Hide Un-Configure ME Confirmation — Prompt	[Disabled]	Note : iAMT H/W is always enabled.
MEBx Debug Message Output	[Disabled]	This option just controls the
Un-Configure ME	[Disabled]	BIOS extension execution.
Amt Wait Timer	0	If enabled, this requires
ASF	[Enabled]	additional firmware in the SPI
Activate Remote Assistance Process	[Disabled]	device
USB Provisioning of AMT	[Enabled]	
PET Progress	[Enabled]	
AMT CIRA Timeout	0	
WatchDog	[Disabled]	++: Select Screen
OS Timer	0	↑↓: Select Item
BIOS Timer	0	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Intel AMT

Enable/disable Intel ® Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.

- BIOS Hotkey Pressed
 OEMFlag Bit 1: Enable/disable BIOS hotkey press.
- MEBx Selection Screen
 OEMFlag Bit 2: Enable/disable selection screen.
- Hide Un-Configuration ME Confirmation Prompt
 OEMFlag Bit 6: Hide Un-configure ME without password confirmation prompt.
- MEBx Debug Message Output OEMFlag Bit 14: Enable debug message output.
- Un-Configure ME
 OEMFlag Bit 15: Un-Configure ME without password.
- Amt Wait Timer
 - Set timer to wait before sending ASF_GET_BOOT_OPTIONS.
- ASF

Enable/disable BIOS Alert specification format.

- Activate Remote Assistance Process
 Trigger CIRA boot.
- USB Provisioning of AMT Enable/disable of AMT USB provisioning.
- PET Progress
 This item for users to enable/disable PET events progress to receive PET events or not.

WatchDog

Enable/disable watchdog timer.

3.1.2.4 PCH-FW Configuration

ME FW Version ME Firmware Mode ME Firmware Type ME Firmware SKU PTT Capability / State NFC Support MEBx Type ME Unconfig on RTC Clear State ME State Firmware Update Configuration	11.0.0.1194 Normal Mode Full Sku Firmware Consumer SKU 1 / O Disabled [None] [Enabled] [Enabled]	MEBx Type ++: Select Screen 14: Select Item Enter: Select
		<pre>+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

MEBx Type

MEBx Type

ME Unconfig on RTC Clear State

Disabling this option will cause ME not to unconfigure on RTC clear state.

- ME State Sets ME to soft temporary disabled.
- Firmware Update Configuration
 Configures management engine technology parameters.

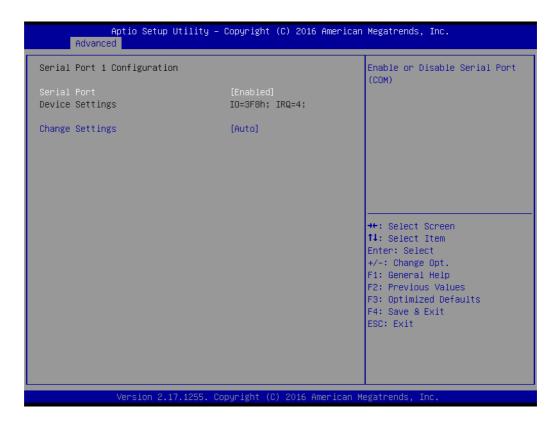
Chapter 3 BIOS Operation

3.1.2.5 W83627DHG Super IO Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2016 Americar	n Megatrends, Inc.
 ₩83627DHG Super IO Configuration Super IO Chip Serial Port 1 Configuration Serial Port 2 Configuration Parallel Port Configuration 	W83627DHG	Set Parameters of Serial Port 1 (COMA)
		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. C	opyright (C) 2016 American M	

- Serial Port 1 Configuration
 Set parameters of serial Port 1 (COMA).
- Serial Port 2 Configuration Set parameters of serial Port 2 (COMB).
- Parallel Port Configuration
 Set parameters of parallel Port (LPT/ LPTE).

Serial Port 1 Configuration



Serial Port

Enable or Disable Serial Port (COM).

- Change Settings
 Select an optimal setting for Super IO device.
- Serial Port 2 Configuration



Chapter 3 BIOS Operation

- Serial Port

Enable or Disable Serial Port (COM).

- Change Settings
 - Select an optimal setting for Super IO device.

Parallel Port Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2016 American	Megatrends, Inc.
Parallel Port Configuration		Enable or Disable Parallel
Parallel Port Device Settings	[Enabled] IO=378h; IRQ=7;	Port (LPT/LPTE)
Change Settings Device Mode	[Auto] [ECP and EPP 1.9 Mode]	
		<pre> ++: Select Screen ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2 17 1255 0	opyright (C) 2016 American M	evatrends Inc

- Parallel Port

Enable or disable parallel port (LPT/LPTE).

- Change Settings
- Select an optimal setting for Super IO device.

- Device Mode

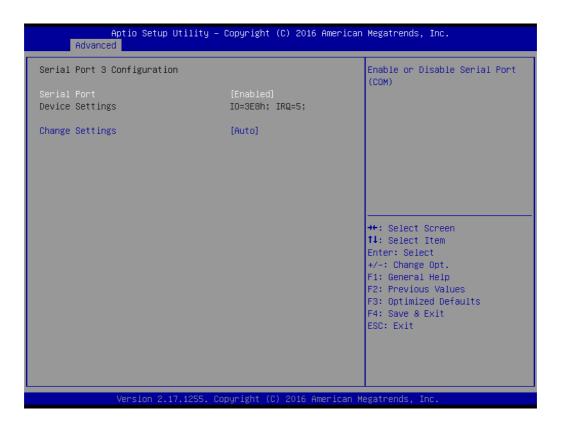
Change the printer port mode.

3.1.2.6 iManager Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2016 American	Megatrends, Inc.
iManager Configuration		CPU Shutdown Temperature
iManager Chipset Firmware Version	IT8528E I285BX0006	
CPU Shutdown Temperature iManager Smart Fan – COM Module iManager Smart Fan – Carrier Board Backlight Enable Polarity Brightness PWM Polarity Power Saving Mode	[Disable] [Enabled] [Native] [Native] [Normal]	
 Serial Port 3 Configuration Serial Port 4 Configuration Hardware Monitor 		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Co	pyright (C) 2016 American M	egatrends, Inc.

- CPU Shutdown Temperature
 CPU shutdown temperature.
- iManager Smart Fan COM Module Controls iManager smart FAN function.
- iManager Smart Fan Carrier Board
 Controls iManager Smart FAN carrier board function.
- Backlight Enable Polarity
 Switches Backlight Enable Polarity to native or invert.
- Brightness PWM Polarity
 Backlight control brightness PWM polarity for native or invert.
- Power Saving Mode
 Selects ite8518 power saving mode.
- Serial Port 3 Configuration
 Sets parameters of serial port 3 (COMA).
- Serial Port 4 Configuration
 Sets parameters of serial port 4 (COMB).
- Hardware Monitor
 Monitors hardware status.

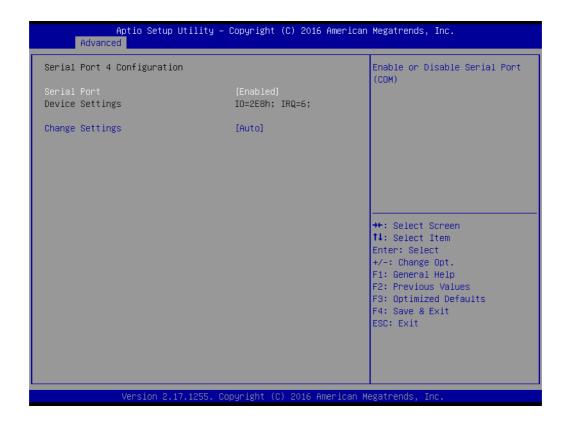
Serial Port 3 Configuration



- Serial Port

Enable or disables serial port (COM).

- Change Settings
 Select an optimal setting for Super IO device.
- Serial Port 4 Configuration



- Serial Port

Enable or disables. serial port (COM).

- Change Settings

Selects an optimal setting for Super IO device.

Hardware Monitor

Aptio Setup Util: Advanced	ity – Copyright (C) 2016 Amer	ican Megatrends, Inc.
PC Health Status		
CPU temperature	: +62°C	
COM Module FAN Carrier Board FAN	: N/A : N/A	
+VBAT +V5SB +VIN	: +2.790 V : +5.042 V : +12.218 V	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.125	55. Copyright (C) 2016 Americ	an Megatrends, Inc.

3.1.2.7 Serial Port Console Redirection

COM1		Console Redirection Enable or Disable.
Console Redirection ▶ Console Redirection Setting	[Disabled] S	
COM2 Console Redirection ▶ Console Redirection Setting	[Disabled] s	
COM3 Console Redirection ▶ Console Redirection Setting	[Disabled] s	
COM4 Console Redirection ▶ Console Redirection Setting	[Disabled] S	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

COM1

Console Redirection Console Redirection enable or disable

COM2

Console Redirection Console Redirection enable or disable

COM3

Console Redirection Console Redirection enable or disable

COM4

Console Redirection Console Redirection enable or disable

3.1.2.8 CPU Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2016 American	Megatrends, Inc.
CPU Configuration		Enabled for Windows XP and Linux (OS optimized for
Intel(R) Core(TM) i3–6100U CPU @ 2.		Hyper-Threading Technology)
CPU Signature	406E3	and Disabled for other OS (OS
Microcode Patch	5E	not optimized for
Max CPU Speed	2300 MHz	Hyper-Threading Technology).
Min CPU Speed	400 MHz	When Disabled only one thread
CPU Speed	2200 MHz	per enabled core is enabled.
Processor Cores	2	
Hyper Threading Technology	Supported	
Intel VT-x Technology	Supported	
Intel SMX Technology	Not Supported	
64-bit	Supported	
EIST Technology	Supported	++: Select Screen
CPU C3 state	Supported	↑↓: Select Item
CPU C6 state	Supported	Enter: Select
CPU C7 state	Supported	+/-: Change Opt.
CPU C8 state	Supported	F1: General Help
CPU C9 state	Supported	F2: Previous Values
CPU C10 state	Supported	F3: Optimized Defaults
		F4: Save & Exit
Hyper-threading	[Enabled]	ESC: Exit
Active Processor Cores	[A11]	
Intel Virtualization Technology	[Enabled]	
Intel(R) SpeedStep(tm)	[Enabled]	
Vencion 2 17 1955 - P	opupidht (C) 2016 Amopicop M	egathends. Inc.
Version 2.17.1255. U	opyright (C) 2016 American M	egatrenus, Inc.

Aptio Setup Utility	– Copyright (C) 2016 (American Megatrends, Inc.
Advanced		
		Turke Mede
Intel(R) Core(TM) i3–6100U CPU @	9 900U-	▲ Turbo Mode.
CPU Signature	406F3	
Microcode Patch	40863 SE	
Max CPU Speed	2300 MHz	
Min CPU Speed	400 MHz	
CPU Speed	2200 MHz	
Processor Cores	2200 Mil2	
Hyper Threading Technology	Supported	
Intel VT-x Technology	Supported	
Intel SMX Technology	Not Supported	
64-bit	Supported	
EIST Technology	Supported	
CPU C3 state	Supported	→+: Select Screen
CPU C6 state	Supported	14: Select Item
CPU C7 state	Supported	Enter: Select
CPU C8 state	Supported	+/-: Change Opt.
CPU C9 state	Supported	F1: General Help
CPU C10 state	Supported	F2: Previous Values
		F3: Optimized Defaults
Hyper-threading	[Enabled]	F4: Save & Exit
Active Processor Cores	[A11]	ESC: Exit
Intel Virtualization Technology	[Enabled]	
Intel(R) SpeedStep(tm)	[Enabled]	
Turbo Mode	[Enabled]	Ŧ
Version 2.17.1255.	Conuright (C) 2016 Am	erican Megatrends, Inc.

Hyper-Threading

This item allows users to enable for Windows XP and Linux (OS optimized for Hyper Threading technology) and disable for other OS (OS not optimized for Hyper Threading technology). When disabled only one thread per enabled core is activated.

Active Processor Cores

This item allows users to set how many processor cores should be active.

Intel Virtualization Technology

When enabled, a VMM can utilize additional hardware capabilities provided by vanderpool technology.

- Intel(R) SpeedStep(tm)
 Allows more than two frequency ranges to be supported.
- Turbo Mode Turbo Mode.

3.1.2.9 SATA Configuration

Aptio Setup l Advanced	Htility – Copyright (C) 2016 A	merican Megatrends, Inc.
SATA Controller(s) SATA Mode Selection	[Enabled] [AHCI]	Enable or disable SATA Device.
Serial ATA Port 0 Software Preserve Port 0 Serial ATA Port 1 Software Preserve Port 1	Empty Unknown [Enabled] Empty Unknown [Enabled]	
		++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.1	2.1255. Copyright (C) 2016 Ame	rican Megatrends, Inc.

- SATA Controller (S) Enable or disable SATA device.
- SATA Mode Selection
 Determines how SATA controller (s) operate.
- Port 0 Enable or disable SATA port.
- Port 1 Enable or disable SATA port.

3.1.2.10 Network Stack Configuration

Aptio Set Advanced	tup Utility – Copyright (C) 2016 Americ	an Megatrends, Inc.
Network Stack	[Disabled]	Enable/Disable UEFI Network Stack
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version	2.17.1255. Copyright (C) 2016 American	Megatrends, Inc.

Network Stack

Enable/Disable UEFI Network Stack.

3.1.2.11 CSM Configuration

Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc. Advanced		
Compatibility Support Module Co	nfiguration	Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	07.79	
GateA20 Active INT19 Trap Response	[Upon Request] [Immediate]	
Boot option filter	[UEFI only]	
Option ROM execution		
Network Storage Video Other PCI devices	[Do not launch] [UEFI] [UEFI] [UEFI]	<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.		

CSM Support

Enable/Disable CSM support.

GateA20 Active

UPON Request- GA20 can be disabled using BIOS services. Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

INT19 Trap Response

BIOS reaction on INT19 trapping by option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.

Boot option filter

This option controls legacy/UEFI ROMs priority.

Network

Controls the execution of UEFI and legacy PXE OpROM.

Storage

Controls the execution of UEFI and legacy storage OpROM.

Video

Controls the execution of UEFI and legacy video OpROM.

Other PCI devices

Determines OpROM execution policy for devices other than network, storage, or video.

3.1.2.12 USB Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2016 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support. AUTO option disables legacy
USB Module Version	13	support if no USB devices are connected. DISABLE option will
USB Controllers: 1 XHCI		keep USB devices available only for EFI applications.
USB Devices: 1 Drive, 1 Keyboard		
Legacy USB Support XHCI Hand-off	[Enabled] [Enabled]	
USB Mass Storage Driver Support	[Enabled]	
Mass Storage Devices: Kingmax USB2.0 FlashDisk1.00	[Auto]	<pre>++: Select Screen \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>
Version 2.17.1255. Co	ppyright (C) 2016 American M	egatrends, Inc.

Legacy USB Support

Enables Legacy USB support. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

XHCI Hand-off

This is a workaround for OS without XHCI ownership change should be claimed by XHCI driver.

USB Mass Storage Driver Support Enable/Disable USB Mass Storage Driver Support.

SOM-6897 User Manual

3.1.3 Chipset

Select the chipset tab from the SOM-6897 setup screen to enter the chipset BIOS Setup screen. You can display a chipset BIOS setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

3.1.3.1 System Agent Bridge Name

Aptio Setup Utility - Chipset	Copyright (C)	2016 American	Megatrends, Inc.
System Agent Bridge Name SA PCIe Code Version VT-d	Skylake 1.8.0.0 Supported		VT-d capability
VT-d Above 4GB MMIO BIOS assignment	[Enabled] [Disabled]		
Graphics Configuration Memory Configuration			
			++: Select Screen ↑↓: Select Item Enter: Select
			+/-: Change Opt. F1: General Help F2: Previous Values
			F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. C	opyright (C) 2	2016 American Me	egatrends, Inc.

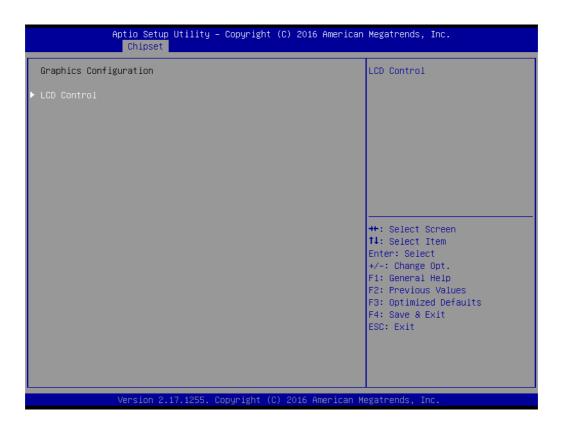
VT-d

VT-d capability.

Above 4GB MMIO BIOS assignment

Enable/disable above 4GB memory mapped IO BIOS assignment. This is disabled automatically when aperture size is set to 2048MB.

Graphics Configuration



- LCD Control

This item allows customers to performs LCD control.

LCD Control

Aptio Setup Chipset	Utility – Copyright	(C) 2016 Americar	n Megatrends, Inc.
LCD Control LCD Panel Type Panel Scaling	[800x600 [Auto]	18bit]	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.
			++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
			F2: Previous values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.1	17.1255. Copyright (C) 2016 American M	Megatrends, Inc.

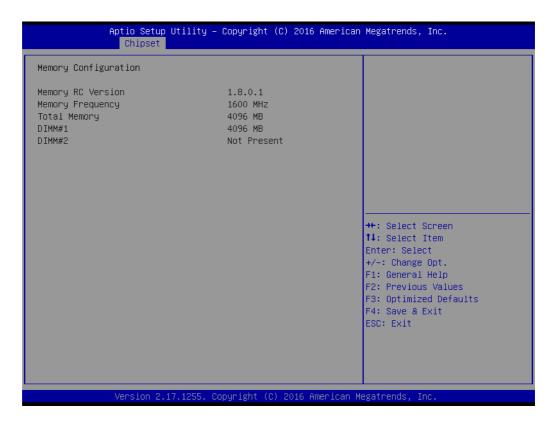
LCD Panel Type

Select an LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

Panel Scaling

Select an LCD panel used by internal graphics device.

Memory Configuration



Chapter 3 BIOS Operation

3.1.3.2 PCH-IO Configuration

Aptio Setup Utility - Chipset	Copyright (C) 2016 American	Megatrends, Inc.
Intel PCH RC Version Intel PCH SKU Name	1.8.0.0 PCH-LP Mobile (U) Premium SKU	PCI Express Configuration settings
Intel PCH Rev ID	21/01	
 PCI Express Configuration USB Configuration HD Audio Configuration 		
PCH LAN Controller Wake on LAN	[Enabled] [Enabled]	
State After G3	[S5 State]	
		++: Select Screen
		†↓: Select Item Enter: Select +/−: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.17.1255. Co	opyright (C) 2016 American M	egatrends, Inc.

PCI Express Configuration

PCI Express configuration settings.

- USB Configuration
 USB Configuration settings.
- HD Audio Configuration
 HD Audio subsystem configuration settings.
- PCH LAN Controller Enable or disable onboard NIC.

Wake on LAN

Enable or disable integrated LAN to wake the system. (The wake on LAN cannot be disabled if ME is on at Sx state.)

State After G3

Specify what state to go to to when power is re-applied after a power failure (G3 state).

PCI Express Configuration

Aptio Setup Utility — Copyright (C) 2016 American <mark>Chipset</mark>	Megatrends, Inc.
<pre>PCI Express Configuration > PCI Express Root Port 0 > PCI Express Root Port 1 > PCI Express Root Port 2 > PCI Express Root Port 3 > PCI Express Root Port 4</pre>	PCI Express Root Port O Settings.
	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17.1255. Copyright (C) 2016 American Mo	egatrends, Inc.

- PCI Express Root Port 0
 PCI Express Root Port 0 settings.
- PCI Express Root Port 1
 PCI Express Root Port 1 settings.
- PCI Express Root Port 2
 PCI Express Root Port 2 settings.
- PCI Express Root Port 4
 PCI Express Root Port 4 settings.

Aptio Setup Utili Chipset	ty – Copyright (C) 2016 f	American Megatrends, Inc.
PCI Express Root Port O ASPM Support PCIe Speed	[Enabled] [Disabled] [Auto]	Control the PCI Express Root Port.
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

PCI Express Root Port 0

Control the PCI Express Root Port.

ASPM Support

Set the ASPM level: Force L0s – Force all links to L0s state.

Auto – BIOS auto configure

Disable – disable ASPM.

PCIe Speed

Select PCI Express port speed.

	Aptio Setup Utility - Chipset	– Copyright (C) 2016 Ameri	ican Megatrends, Inc.
PCI Express R ASPM Support PCIe Speed	oot Port 1	[Enabled] [Disabled] [Auto]	Control the PCI Express Root Port.
		Copyright (C) 2016 America	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

PCI Express Root Port 1

Control the PCI Express Root Port.

ASPM Support

Set the ASPM level: Force L0s – Force all links to L0s state.

Auto – BIOS auto configure

Disable – disable ASPM.

PCIe Speed

Select PCI Express port speed.

Aptio Setup Utili Chipset	ty – Copyright (C) 2016 f	American Megatrends, Inc.
PCI Express Root Port 2 ASPM Support PCIe Speed	[Enabled] [Disabled] [Auto]	Control the PCI Express Root Port.
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

PCI Express Root Port 2

This item allows users to enable or disable PCI Express Root Port.

ASPM

This item allows users to select PCI Express Active State Power Management settings.

PCIe Speed

This item allows users to select PCIe Speed.

Detect Non-Compliance Device

Detect Non-Compliance Device PCI Express Device. If enabled, it will take more time at POST time.

	Aptio Setup Utility - Chipset	Copyright (C) 2016 American	Megatrends, Inc.
PCI Express R ASPM Support PCIe Speed	oot Port 3	[Enabled] [Disabled] [Auto]	Control the PCI Express Root Port.
		pyright (C) 2016 American M	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

PCI Express Root Port 3

Controls the PCI Express Root Port.

ASPM Support

Set the ASPM level: Force L0s - Force all links to L0s state.

Auto - BIOS auto configure

Disable - disables ASPM.

PCIe Speed

Select PCI Express port speed.

PCI Express Root Port 4 [Enabled] Control the PCI Express F ASPM Support [Disabled] Port. PCIe Speed [Auto] ++: Select Screen ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit ESC: Exit	Aptio Setu Chipset	p Utility – Copyright (C) 2016 American	Megatrends, Inc.
<pre>11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit</pre>	ASPM Support	[Disabled]	Control the PCI Express Root Port.
			<pre>\$\$\$ \$</pre>

PCI Express Root Port 4

Controls the PCI Express Root Port.

ASPM Support

Set the ASPM level: Force L0s - Force all links to L0s state.

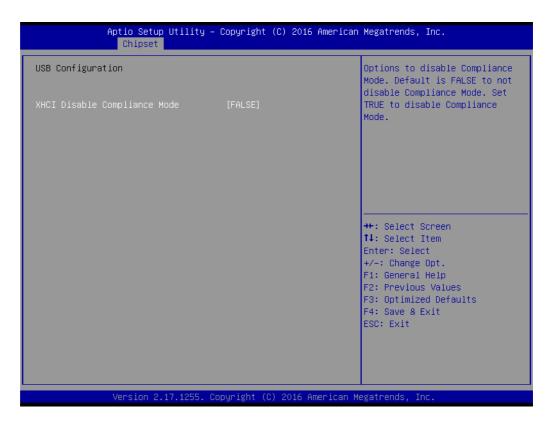
Auto - BIOS auto configure

Disable - disable ASPM.

PCIe Speed

Select PCI Express port speed.

USB Configuration



- XHCI Disable Compliance Mode

Options to disable compliance mode. Default is FALSE which does not disable compliance mode. Set TRUE to disable compliance mode.

HD Audio Configuration

Chipset		
HD Audio Configuration HD Audio		Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	.17.1255. Copyright (C) 2016 Ame	

- HD Audio

Control detection of the HD-Audio device.

Disable = HDA will be unconditionally disabled.

Enable = HDA will be unconditionally enabled.

Auto = HDA will be enabled if present, disabled otherwise.

3.1.4 Security Setting

Select Security Setup from the SOM-6897 Setup main BIOS setup menu. All Security Setup options, such as password protection is described in this section. To access the sub menu for the following items, select the item and press <Enter>:

Aptio Setup U Main Advanced Chipset S	tility – Copyright (C) 2016 Ame ecurity Boot Save & Exit	erican Megatrends, Inc.
Password Description If ONLY the Administrator's then this only limits acces	s to Setup and is	Set Administrator Password
only asked for when enterin If ONLY the User's password is a power on password and boot or enter Setup. In Set have Administrator rights. The password length must be	is set, then this must be entered to up the User will	
in the following range: Minimum length Maximum length	3 20	
Maximum length Administrator Password User Password	20	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.17	.1255. Copyright (C) 2016 Ameri	ican Megatrends, Inc.

Change Administrator / User Password: Select this option and press <ENTER> to access the sub menu, and then type in the password.

3.1.5 Boot Settings



Setup Prompt Timeout

This item allows users to select the number of seconds to wait for setup activation key. 65535 (0xFFF) means indefinite waiting.

Bootup NumLock State This item allows users to select the keyboard Numlock state.

Quiet Boot

This item allows users to enable or disable quiet boot option

Boot Option #1

Sets the system boot order

Fast Boot

This item allows users to enable or disable boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

3.1.6 Save & Exit

Aptio Setup Utility – Copyright (C) 2016 Americ Main Advanced Chipset Security Boot Save & Exit	can Megatrends, Inc.
Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Changes Discard Changes Default Options Restore Defaults	Exit system setup after saving the changes.
Save as User Defaults Restore User Defaults Boot Override UEFI: Kingmax USB2.0 FlashDisk1.00, Partition 1 Launch EFI Shell from filesystem device	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

3.1.6.1 Save Changes and Exit

When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer if necessary to take effect all system configuration parameters.

3.1.6.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

3.1.6.3 Save Changes and Reset

When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer to take effect on all system configuration parameters.

3.1.6.4 Discard Changes and Reset

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer.

3.1.6.5 Save Changes

When users have completed system configuration, select this option to save changes without exit BIOS setup menu.

3.1.6.6 Discard Changes

Select this option to discard any current changes and load previous system configuration.

3.1.6.7 Restore Defaults

The SOM-6897 automatically configures all setup items to optimal settings when users select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if the user's computer is experiencing system configuration problems.

3.1.6.8 Save User Defaults

When users have completed system configuration, select this option to save changes as user defaults without exit BIOS setup menu.

3.1.6.9 Restore User Defaults

The users can select this option to restore user defaults.

3.1.6.10 Windows Boot Manager (P0: WDC WD5000AAKX-00ERMA0)

3.1.6.11 Launch EFI Shell from file system device

This items attempts to Launch EFI Shell application (Shell.efi) from one of the available file system devices.



S/W Introduction & Installation

Sections include: ■ S/W Introduction ■ Driver Installation ■ Advantech iManager

4.1 S/W Introduction

The mission of Advantech Embedded Software Services is to "Enhance quality of life with Advantech platforms and Microsoft Windows embedded technology." We enable Windows Embedded software products on Advantech platforms to more effectively support the embedded computing community. Customers are freed from the hassle of dealing with multiple vendors (Hardware suppliers, System integrators, Embedded OS distributor) for projects. Our goal is to make Windows Embedded Software solutions easily and widely available to the embedded computing community.

4.2 **Driver Installation**

The Intel Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured.

4.2.1 Windows Driver Setup

To install the drivers on a windows-based OS, please connect to the internet and go to http://support.advantech.com.tw to download the drivers that you want to install and follow Driver Setup instructions to complete the installation.

4.2.2 Other OS

To install the drivers for Linux or other OS, please connect to the internet and go to http://support.advantech.com.tw to download the setup file.

4.3 Advantech iManager

Advantech's platforms come equipped with iManager, a micro controller that provides embedded features for system integrators. Embedded features have been moved from the OS/BIOS level to the board level, to increase reliability and simplify integration.

iManager runs whether the operating system is running or not; it can count the boot times and running hours of the device, monitor device health, and provide an advanced watchdog to handle errors as they happen. iManager also comes with a secure & encrypted EEPROM for storing important security keys or other customer information. All the embedded functions are configured through the API and provide corresponding utilities to demonstrate. These APIs comply with PICMG EAPI (Embedded Application Programmable Interface) specifications and makes these embedded features easier to integrate, speed development schedules, and provide customer's with software continuity while upgrading hardware. More details of how to use the APIs and utilities, please refer to the Advantech iManager 2.0 Software API User Manual.



General Purpose Input/Output is a Texible parallel interface mat allows a variety of custom connections. It allows users to monitor the level of signal input or set the output statuta or satich on/off a device. Our API also porvices Programmable GPIO, which allows developers to dynamically set the GPIO low of on-one status. input or output status.



SMBus is the System Management Bus defined by Intel[®] Corporation in 1995. It is used in personal computers and serves to low-toxed system management communications for SMBus AP allows a devideor to Interface are ambedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device roted.



PC is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1960s. The PC APT allows a developer to interface with an emcadded system environment and transfer seral message using the PC protocols, allowing multiple simultaneous device control.





Monitor

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.

A watchdog timer (NOT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.



The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

Power Saving

indware



Make use of Intel SpeedStep technology to reduce power po consumption. The system will automatically adjust the CPU Speed depending on system loading.



The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.



Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.



Pin Assignment

This appendix gives you the information about the hardware pin assignment of the SOM-6897 CPU System on Module.

Sections include:

■ SOM-6897 Type 6 Pin Assignment

A.1 SOM-6897 Type 6 Pin Assignment

This section gives SOM-6897 pin assignment on COM Express connector which compliant with COMR.0 R2.1 Type 6 pin-out definitions. More details about how to use these pins and get design reference, please contact to Advantech for design guides, checklists, reference schematics, and other hardware/software support.

SOM-6	897 Row A,B		
A1	GND (FIXED)	B1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#
A3	GBE0_MDI3+	B3	LPC_FRAME#
A4	GBE0_LINK100#	B4	LPC_AD0
A5	 GBE0_LINK1000#	B5	LPC_AD1
A6	GBE0_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	GBE0_LINK#	B8	N/A
A9	GBE0_MDI1-	B9	N/A
A10	GBE0_MDI1+	B10	LPC_CLK
A11	GND (FIXED)	B11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#
A13	GBE0_MDI0+	B13	SMB_CK
A14	N/A	B14	SMB_DAT
A15	SUS_S3#	B15	SMB_ALERT#
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-
A18	SUS_S4#	B18	SUS_STAT#
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-
A21	GND (FIXED)	B21	GND (FIXED)
A22	SATA2_TX+	B22	SATA3_TX+
A23	SATA2_TX-	B23	SATA3_TX-
A24	SUS_S5#	B24	PWR_OK
A25	SATA2_RX+	B25	SATA3_RX+
A26	SATA2_RX-	B26	SATA3_RX-
A27	BATLOW#	B27	WDT
A28	(S)ATA_ACT#	B28	AC/HDA_SDIN2
A29	AC/HDA_SYNC	B29	AC/HDA_SDIN1
A30	AC/HDA_RST#	B30	AC/HDA_SDIN0
A31	GND (FIXED)	B31	GND (FIXED)
A32	AC/HDA_BITCLK	B32	SPKR
A33	AC/HDA_SDOUT	B33	I2C_CK
A34	BIOS_DIS0#	B34	I2C_DAT
A35	THRMTRIP#	B35	THRM#
A36	USB6-	B36	USB7-
A37	USB6+	B37	USB7+
A38	USB_6_7_OC#	B38	USB_4_5_OC#
A39	USB4-	B39	USB5-
A40	USB4+	B40	USB5+
A41	GND (FIXED)	B41	GND (FIXED)

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A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-
A46	USB0+	B46	USB1+
A47	VCC_RTC	B47	EXCD1_PERST#
A48	EXCD0_PERST#	B48	EXCD1_CPPE#
A49	EXCD0_CPPE#	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND (FIXED)	B51	GND (FIXED)
A52	PCIE_TX5+	B52	PCIE_RX5+
A53	PCIE_TX5-	B53	PCIE_RX5-
A54	GPI0	B54	GPO1
A55	PCIE_TX4+	B55	PCIE_RX4+
A56	PCIE_TX4-	B56	PCIE_RX4-
A57	GND	B57	GPO2
A58	PCIE_TX3+ (if C25 stuffed)	B58	PCIE_RX3+ (if R545 stuffed)
A59	PCIE_TX3- (if C24 stuffed)	B59	PCIE_RX3- (if R546 stuffed)
A60	GND (FIXED)	B60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+
A62	PCIE_TX2-	B62	PCIE_RX2-
A63	GPI1	B63	GPO3
A64	PCIE_TX1+	B64	PCIE_RX1+
A65	PCIE_TX1-	B65	PCIE_RX1-
A66	GND	B66	WAKE0#
A67	GPI2	B67	WAKE1#
A68	PCIE_TX0+	B68	PCIE_RX0+
A69	PCIE_TX0-	B69	PCIE_RX0-
A70	GND (FIXED)	B70	GND (FIXED)
A71	LVDS_A0+	B71	LVDS_B0+
A72	LVDS_A0-	B72	LVDS_B0-
A73	LVDS_A1+	B73	LVDS_B1+
A74	LVDS_A1-	B74	LVDS_B1-
A75	LVDS_A2+	B75	LVDS_B2+
A76	LVDS_A2-	B76	LVDS_B2-
A77	LVDS_VDD_EN	B77	LVDS_B3+
A78	 LVDS_A3+	B78	LVDS_B3-
A79	LVDS_A3-	B79	LVDS_BKLT_EN
A80	GND (FIXED)	B80	GND (FIXED)
A81	LVDS_A_CK+	B81	LVDS_B_CK+
A82	LVDS_A_CK-	B82	LVDS_B_CK-
A83	LVDS_I2C_CK	B83	LVDS_BKLT_CTRL
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY
A85	GPI3	B85	VCC_5V_SBY
A86	RSVD(KBD_RST# if R472 stuffed)		VCC_5V_SBY
A87	N/A	B87	VCC_5V_SBY
A88	PCIE CLK REF+	B88	BIOS_DIS1#
A89	PCIE CLK REF-	B89	VGA RED
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A90 GND (FIXED) B90 GND (FIXED) A91 SPI_POWER B91 VGA_GRN A92 SPI_MISO B92 VGA_HSYNC A93 SPI_CLK B94 VGA_CCX A94 SPI_CLK B94 VGA_I2C_DAT A95 SPI_MOSI B95 VGA_I2C_DAT A96 N/A B96 VGA_I2C_DAT A97 TYPE10# B97 SPI_CS# A98 SERO_TX B98 RSVD A98 SERO_TX B98 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SERI_TX B101 FAN_TACHIN A102 SERI_TX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B104 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B108 VCC_12V A107 VCC_12V B108 VCC_12V	100		Doo	
A92 SPI_MISO B92 VGA_BLU A93 GPO0 B93 VGA_HSVNC A94 SPI_CLK B94 VGA_VSYNC A95 SPI_MOSI B95 VGA_I2C_CK A96 N/A B96 VGA_I2C_DAT A97 TYPE10# B97 SPI_CS# A98 SERO_TX B98 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SERI_TX B101 FAN_PWMOUT A102 SERI_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B105 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B108 VCC_12V A109 VCC_12V B108 VCC_12V	A90	GND (FIXED)	B90	GND (FIXED)
A93 GP00 B93 VGA_HSYNC A94 SP_CLK B94 VGA_VSYNC A95 SPI_MOSI B95 VGA_I2C_CK A96 N/A B96 VGA_I2C_DAT A97 TYPE10# B97 SPI_CS# A98 SER0_TX B98 RSVD A99 SER0_RX B99 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SER1_RX B102 FAN_TACHIN A102 SER1_RX B103 SLEEP# A104 VCC_12V B106 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B108 VCE SOM-6897 Row C,D GND GND				
A94 SPI_CLK B94 VGA_VSYNC A95 SPI_MOSI B95 VGA_I2C_CK A96 N/A B96 VGA_I2C_DAT A97 TYPE10# B97 SPI_CS# A98 SER0_RX B98 RSVD A90 GND (FIXED) B100 GND (FIXED) A101 SER1_TX B101 FAN_TACHIN A102 SER1_TX B102 FAN_TACHIN A103 LD# B103 SLEEP# A104 VCC_12V B105 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B108 VCC_12V A106 VCC_12V B108 VCC_12V A107 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A100 ND D2 GND <td< td=""><td></td><td></td><td></td><td></td></td<>				
A95 SP_MOSI B95 VGA_I2C_CK A96 N/A B96 VGA_I2C_DAT A97 TYPE10# B97 SPI_CS# A98 SERO_TX B98 RSVD A99 SERO_RX B99 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SERI_TX B101 FAN_PWMOUT A102 SERI_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B105 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B108 VCC_12V A100 GND (FIXED) D1 GND (FIXED) <tr< td=""><td></td><td></td><td></td><td>-</td></tr<>				-
A96 N/A B96 VGA_I2C_DAT A97 TYPE10# B97 SPI_CS# A98 SER0_TX B98 RSVD A99 SER0_RX B99 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SER1_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B106 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A100 GND (FIXED) D1 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D5 GND C3 USB_SSRX0+ D4 USB_SSRX0+				
A97 TYPE10# B97 SPCS# A98 SER0_TX B98 RSVD A99 SER0_RX B99 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SER1_TX B101 FAN_PWMOUT A102 SER1_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B106 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A100 GND (FIXED) B11 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0+ D4 USB_SSRX0+ C4 USB_SSRX1+ D6 USB_SSRX1+				
A98 SER0_TX B98 RSVD A99 SER0_RX B99 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SER1_TX B101 FAN_PWMOUT A102 SER1_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B105 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B108 VCC_12V A101 GND (FIXED) B110 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0+ D4 USB_SSTX0+ C4 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+		N/A	B96	VGA_I2C_DAT
A99 SER0_RX B99 RSVD A100 GND (FIXED) B100 GND (FIXED) A101 SER1_TX B101 FAN_PWMOUT A102 SER1_RX B103 SLEEP# A104 VCC_12V B104 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B106 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B108 VCC_12V A109 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V <	A97	TYPE10#	B97	SPI_CS#
A100 GND (FIXED) B100 GND (FIXED) A101 SER1_TX B101 FAN_PWMOUT A102 SER1_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B105 VCC_12V A105 VCC_12V B105 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A100 GND (FIXED) D1 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0+ D4 USB_SSTX0+ C4 USB_SSRX1+ D6 USB_SSTX1+ C7 USB_SSRX1+ D6 USB_SSTX1+ </td <td>A98</td> <td>SER0_TX</td> <td>B98</td> <td>RSVD</td>	A98	SER0_TX	B98	RSVD
A101 SER1_TX B101 FAN_PWMOUT A102 SER1_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B105 VCC_12V A105 VCC_12V B106 VCC_12V A106 VCC_12V B106 VCC_12V A107 VCC_12V B106 VCC_12V A108 VCC_12V B107 VCC_12V A109 VCC_12V B109 VCC_12V A100 GND (FIXED) D1 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0+ D4 USB_SSTX0+ C4 USB_SSRX1+ D6 USB_SSTX1+ <t< td=""><td>A99</td><td>SER0_RX</td><td>B99</td><td>RSVD</td></t<>	A99	SER0_RX	B99	RSVD
A102 SER1_RX B102 FAN_TACHIN A103 LID# B103 SLEEP# A104 VCC_12V B104 VCC_12V A105 VCC_12V B105 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B107 VCC_12V A108 VCC_12V B107 VCC_12V A109 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0+ D4 USB_SSTX0+ C4 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D10 N/A C11 </td <td>A100</td> <td>GND (FIXED)</td> <td>B100</td> <td>GND (FIXED)</td>	A100	GND (FIXED)	B100	GND (FIXED)
A103 LID# B103 SLEEP# A104 VCC_12V B104 VCC_12V A105 VCC_12V B105 VCC_12V A106 VCC_12V B106 VCC_12V A106 VCC_12V B107 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A100 GND (FIXED) B110 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0+ D4 USB_SSTX0+ C4 USB_SSRX1+ D4 USB_SSTX1+ C5 GND D5 GND C6 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9	A101	SER1_TX	B101	FAN_PWMOUT
A104 VCC_12V B104 VCC_12V A105 VCC_12V B105 VCC_12V A106 VCC_12V B106 VCC_12V A107 VCC_12V B108 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0- D3 USB_SSTX0- C4 USB_SSRX1+ D4 USB_SSTX1- C5 GND D5 GND C6 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D6 USB_SSTX1+ C8 GND D10 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12	A102	SER1_RX	B102	FAN_TACHIN
A105 VCC_12V B105 VCC_12V A106 VCC_12V B106 VCC_12V A107 VCC_12V B107 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) SOM-6897 Row C,D D1 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C2 GND D3 USB_SSTX0- C3 C3 USB_SSRX0- D3 USB_SSTX0- C4 USB_SSRX1- D6 USB_SSTX1- C6 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D9 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 </td <td>A103</td> <td>LID#</td> <td>B103</td> <td>SLEEP#</td>	A103	LID#	B103	SLEEP#
A106 VCC_12V B106 VCC_12V A107 VCC_12V B107 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) SOM-6897 Row C,D D1 GND (FIXED) C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C2 GND D2 GND C2 GND D5 GND C3 USB_SSRX0+ D4 USB_SSTX0+ C4 C5 GND D5 GND C6 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A	A104	VCC_12V	B104	VCC_12V
A107 VCC_12V B107 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) SOM-6897 Row C,D D1 GND (FIXED) D1 C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0- D3 USB_SSTX0- C4 USB_SSRX1+ D4 USB_SSTX1+ C5 GND D5 GND C6 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A D13 N/A C14 GND D14 GND C15 N/A	A105	VCC_12V	B105	VCC_12V
A108 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) SOM-6897 Row C,D D1 GND (FIXED) D1 C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0- D3 USB_SSTX0- C4 USB_SSRX0+ D4 USB_SSTX0+ C5 GND D5 GND C6 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A D13 N/A C14 GND D14 GND C15 N/A D15 D11_CTRLCLK_AUX+ C16 N/A <td>A106</td> <td>VCC_12V</td> <td>B106</td> <td>VCC_12V</td>	A106	VCC_12V	B106	VCC_12V
A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) SOM-6897 Row C,D C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0- D3 USB_SSTX0- C4 USB_SSRX0+ D4 USB_SSTX0+ C5 GND D5 GND C6 USB_SSRX1- D6 USB_SSTX1- C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D9 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A D13 N/A C14 GND D14 GND C15 N/A D13 N/A C14 GND D14 GND C15 N/A D15 DDI1_CTRLCLK_AUX+	A107	VCC_12V	B107	VCC_12V
A110 GND (FIXED) B110 GND (FIXED) SOM-6897 Row C,D D1 GND (FIXED) D2 GND C2 GND D2 GND C2 GND C3 USB_SSRX0- D3 USB_SSTX0- C3 USB_SSRX0+ D4 USB_SSTX0+ C4 USB_SSRX0+ D4 USB_SSTX0+ C6 USB_SSRX1+ D6 USB_SSTX1- C6 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND C8 GND D8 GND D8 GND C9 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A C13 N/A C14 GND C14 GND C14 GND C14 GND C15 D11	A108	VCC_12V	B108	VCC_12V
A110 GND (FIXED) B110 GND (FIXED) SOM-6897 Row C,D D1 GND (FIXED) D2 GND C2 GND D2 GND C2 GND C3 USB_SSRX0- D3 USB_SSTX0- C3 USB_SSRX0+ D4 USB_SSTX0+ C4 USB_SSRX0+ D4 USB_SSTX0+ C6 USB_SSRX1+ D6 USB_SSTX1- C6 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND C8 GND D8 GND D8 GND C9 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A C13 N/A C14 GND C14 GND C14 GND C14 GND C15 D11	A109	VCC_12V	B109	VCC_12V
SOMI-6897 Row C,D C1 GND (FIXED) D1 GND (FIXED) C2 GND D2 GND C3 USB_SSRX0- D3 USB_SSTX0- C4 USB_SSRX0+ D4 USB_SSTX0+ C5 GND D5 GND C6 USB_SSRX1- D6 USB_SSTX1+ C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D9 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A D13 N/A C14 GND D14 GND C15 N/A D15 DD11_CTRLCLK_AUX+ C16 N/A D16 DD11_CTRLCLK_AUX+ C16 N/A D17 RSVD C18 RSVD D18 RSVD C19	A110	GND (FIXED)	B110	
C1GND (FIXED)D1GND (FIXED)C2GNDD2GNDC3USB_SSRX0-D3USB_SSTX0-C4USB_SSRX0+D4USB_SSTX0+C5GNDD5GNDC6USB_SSRX1-D6USB_SSTX1-C7USB_SSRX1+D7USB_SSTX1+C8GNDD8GNDC9N/AD9N/AC10N/AD10N/AC11GND (FIXED)D11GND (FIXED)C12N/AD12N/AC13N/AD13N/AC14GNDD14GNDC15N/AD15DD11_CTRLCLK_AUX+C16N/AD16DD11_CTRLDATA_AUX-C17RSVDD17RSVDC18RSVDD18RSVDC19N/AD20N/AC20N/AD21GND (FIXED)C21GND (FIXED)D21GND (FIXED)C22N/AD23N/AC23N/AD24RSVD				
C1GND (FIXED)D1GND (FIXED)C2GNDD2GNDC3USB_SSRX0-D3USB_SSTX0-C4USB_SSRX0+D4USB_SSTX0+C5GNDD5GNDC6USB_SSRX1-D6USB_SSTX1-C7USB_SSRX1+D7USB_SSTX1+C8GNDD8GNDC9N/AD9N/AC10N/AD10N/AC11GND (FIXED)D11GND (FIXED)C12N/AD12N/AC13N/AD13N/AC14GNDD14GNDC15N/AD15DD11_CTRLCLK_AUX+C16N/AD16DD11_CTRLDATA_AUX-C17RSVDD17RSVDC18RSVDD18RSVDC19N/AD20N/AC20N/AD21GND (FIXED)C21GND (FIXED)D21GND (FIXED)C22N/AD23N/AC23N/AD24RSVD	SOM-68	97 Row C.D		
C2 GND D2 GND C3 USB_SSRX0- D3 USB_SSTX0- C4 USB_SSRX0+ D4 USB_SSTX0+ C5 GND D5 GND C6 USB_SSRX1- D6 USB_SSTX1- C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D9 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A D13 N/A C14 GND D14 GND C15 N/A D13 N/A C14 GND D14 GND C15 N/A D15 DD11_CTRLCLK_AUX+ C16 N/A D16 DD11_CTRLDATA_AUX- C17 RSVD D18 RSVD C18 RSVD D18 RSVD <td></td> <td></td> <td>D1</td> <td>GND (FIXED)</td>			D1	GND (FIXED)
C3USB_SSRX0-D3USB_SSTX0-C4USB_SSRX0+D4USB_SSTX0+C5GNDD5GNDC6USB_SSRX1-D6USB_SSTX1-C7USB_SSRX1+D7USB_SSTX1+C8GNDD8GNDC9N/AD9N/AC10N/AD10N/AC11GND (FIXED)D11GND (FIXED)C12N/AD12N/AC13N/AD13N/AC14GNDD14GNDC15N/AD15DDI1_CTRLCLK_AUX+C16N/AD16DDI1_CTRLDATA_AUX-C17RSVDD17RSVDC18RSVDD18RSVDC19N/AD20N/AC21GND (FIXED)D21GND (FIXED)C22N/AD22N/AC23N/AD23N/AC24DD1_HPDD24RSVD		, ,		, ,
C4 USB_SSRX0+ D4 USB_SSTX0+ C5 GND D5 GND C6 USB_SSRX1- D6 USB_SSTX1- C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D9 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A D13 N/A C14 GND D14 GND C15 N/A D15 DDI1_CTRLCLK_AUX+ C16 N/A D16 DDI1_CTRLCLK_AUX+ C17 RSVD D17 RSVD C18 RSVD D18 RSVD C19 N/A D20 N/A C20 N/A D20 N/A C21 GND (FIXED) D21 GND (FIXED) C22 N/A D22 N/A				
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C7 USB_SSRX1+ D7 USB_SSTX1+ C8 GND D8 GND C9 N/A D9 N/A C10 N/A D10 N/A C11 GND (FIXED) D11 GND (FIXED) C12 N/A D12 N/A C13 N/A D13 N/A C14 GND D14 GND C15 N/A D15 DDI1_CTRLCLK_AUX+ C16 N/A D16 DDI1_CTRLDATA_AUX- C17 RSVD D17 RSVD C18 RSVD D18 RSVD C19 N/A D20 N/A C20 N/A D20 N/A C21 GND (FIXED) D21 GND (FIXED) C21 GND (FIXED) D21 GND (FIXED) C21 GND (FIXED) D21 GND (FIXED) C22 N/A D22 N/A C23 N/A D23 N				
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C9N/AD9N/AC10N/AD10N/AC11GND (FIXED)D11GND (FIXED)C12N/AD12N/AC13N/AD13N/AC14GNDD14GNDC15N/AD15DDI1_CTRLCLK_AUX+C16N/AD16DDI1_CTRLDATA_AUX-C17RSVDD17RSVDC18RSVDD18RSVDC19N/AD20N/AC20N/AD21GND (FIXED)C21GND (FIXED)D21GND (FIXED)C22N/AD23N/AC24DD11_HPDD24RSVD				-
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C15N/AD15DDI1_CTRLCLK_AUX+C16N/AD16DDI1_CTRLDATA_AUX-C17RSVDD17RSVDC18RSVDD18RSVDC19N/AD19N/AC20N/AD20N/AC21GND (FIXED)D21GND (FIXED)C22N/AD23N/AC23N/AD24RSVD				
C16N/AD16DDI1_CTRLDATA_AUX-C17RSVDD17RSVDC18RSVDD18RSVDC19N/AD19N/AC20N/AD20N/AC21GND (FIXED)D21GND (FIXED)C22N/AD22N/AC23N/AD23N/AC24DD11_HPDD24RSVD				
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C18 RSVD D18 RSVD C19 N/A D19 N/A C20 N/A D20 N/A C21 GND (FIXED) D21 GND (FIXED) C22 N/A D22 N/A C23 N/A D23 N/A C24 DDI1_HPD D24 RSVD				
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C20 N/A D20 N/A C21 GND (FIXED) D21 GND (FIXED) C22 N/A D22 N/A C23 N/A D23 N/A C24 DD11_HPD D24 RSVD				
C21 GND (FIXED) D21 GND (FIXED) C22 N/A D22 N/A C23 N/A D23 N/A C24 DDI1_HPD D24 RSVD				
C22 N/A D22 N/A C23 N/A D23 N/A C24 DDI1_HPD D24 RSVD				
C23 N/A D23 N/A C24 DDI1_HPD D24 RSVD		, ,		, ,
C24 DDI1_HPD D24 RSVD			_	
C25 N/A D25 RSVD	-	-	_	
	C25	N/A	D25	RSVD

000		B 00	
C26	N/A	D26	DDI1_PAIR0+
C27	RSVD	D27	DDI1_PAIR0-
C28	RSVD	D28	RSVD
C29	N/A	D29	DDI1_PAIR1+
C30	N/A	D30	DDI1_PAIR1-
C31	GND (FIXED)	D31	GND (FIXED)
C32	DDI2_CTRLCLK_AUX+ (if R108 stuffed)	D32	DDI1_PAIR2+
C33	DDI2_CTRLDATA_AUX- (if R109 stuffed)	D33	DDI1_PAIR2-
C34	DDI2_DDC_AUX_SEL (if R108/R109 stuffed)	D34	DDI1_DDC_AUX_SEL
C35	RSVD	D35	RSVD
C36	N/A	D36	DDI1_PAIR3+
C37	N/A	D37	DDI1_PAIR3-
C38	N/A	D38	RSVD
C39	N/A	D39	DDI2_PAIR0+ (if R6 stuffed)
C40	N/A	D40	DDI2_PAIR0- (if R5 stuffed)
C41	GND (FIXED)	D41	GND (FIXED)
C42	N/A	D42	DDI2_PAIR1+ (if R8 stuffed)
C43	N/A	D43	DDI2_PAIR1- (if R7 stuffed)
C44	N/A	D44	DDI2_HPD (if R544 stuffed)
C45	RSVD	D45	RSVD
C46	N/A	D46	DDI2_PAIR2+ (if R5/R6/R7/R8 stuffed)
C47	N/A	D47	DDI2_PAIR2- (if R5/R6/R7/R8 stuffed)
C48	RSVD	D48	RSVD
C49	N/A	D49	DDI2_PAIR3+ (if R5/R6/R7/R8 stuffed)
C50	N/A	D50	DDI2_PAIR3- (if R5/R6/R7/R8 stuffed)
C51	GND (FIXED)	D51	GND (FIXED)
C52	PCIE RX16+ (if R140 stuffed)	D52	PCIE_TX16+ (if C13 stuffed)
C53	PCIE_RX16- (if R139 stuffed)	D53	PCIE_TX16- (if C12 stuffed)
C54	TYPE0#	D54	N/A
C55	PCIE_RX17+ (if R140/R139 stuffed)	D55	PCIE_TX17+ (if C13/C12 stuffed)
C56	PCIE RX17- (if R140/R139 stuffed)	D56	PCIE TX17- (if C13/C12 stuffed)
C57	TYPE1#	D57	TYPE2#
C58	PCIE_RX18+ (if R140/R139 stuffed)	D58	PCIE_TX18+ (if C13/C12 stuffed)
C59	PCIE_RX18- (if R140/R139 stuffed)	D59	PCIE_TX18- (if C13/C12 stuffed)
C60	GND (FIXED)	D60	GND (FIXED)
C61	PCIE_RX19+ (if R140/R139 stuffed)	D61	PCIE_TX19+ (if C13/C12 stuffed)
C62	PCIE_RX19- (if R140/R139 stuffed)	D62	PCIE_TX19- (if C13/C12 stuffed)
C63	RSVD	D63	RSVD

C64	RSVD	D64	RSVD
C65	N/A	D65	N/A
C66	N/A	D66	N/A
C67	RSVD	D67	GND
C68	N/A	D68	N/A
C69	N/A	D69	N/A
C70	GND (FIXED)	D70	GND (FIXED)
C71	N/A	D71	N/A
C72	N/A	D72	N/A
C73	GND	D73	GND
C74	N/A	D74	N/A
C75	N/A	D75	N/A
C76	GND	D76	GND
C77	RSVD	D77	RSVD
C78	N/A	D78	N/A
C79	N/A	D79	N/A
C80	GND (FIXED)	D80	GND (FIXED)
C81	N/A	D81	N/A
C82	N/A	D82	N/A
C83	RSVD	D83	RSVD
C84	GND	D84	GND
C85	N/A	D85	N/A
C86	N/A	D86	N/A
C87	GND	D87	GND
C88	N/A	D88	N/A
C89	N/A	D89	N/A
C90	GND (FIXED)	D90	GND (FIXED)
C91	N/A	D91	N/A
C92	N/A	D92	N/A
C93	GND	D93	GND
C94	N/A	D94	N/A
C95	N/A	D95	N/A
C96	GND	D96	GND
C97	RSVD	D97	N/A
C98	N/A	D98	N/A
C99	N/A	D99	N/A
C100	GND (FIXED)	D100	GND (FIXED)
C100	N/A	D100	N/A
C101	N/A N/A	D101	N/A
C102	GND	D102	GND
	VCC_12V	D103	
C104			VCC_12V
C105	VCC_12V	D105	VCC_12V
C106	VCC_12V	D106	VCC_12V
C107	VCC_12V	D107	VCC_12V
C108	VCC_12V	D108	VCC_12V
C109	VCC_12V	D109	VCC_12V
C110	GND (FIXED)	D110	GND (FIXED)



Watchdog Timer

This appendix gives you the information about the watchdog timer programming on the SOM-6897 CPU System on Module.

Sections include:

■ Watchdog Timer Programming

B.1 Programming the Watchdog Timer

Trigger Event	Note	
IRQ	(BIOS setting default disable)**	
NMI	N/A	
SCI	Power button event	
Power Off	Support	
H/W Restart	Support	
WDT Pin Activate	Support	

 ** WDT new driver support automatically selects available IRQ number from BIOS, and then sets EC. Only Win XP, Win7 and Win8 supports it.

In other OS, it will still use IRQ number from BIOS setting as usual.

For details, please refer to *iManager & Software API User Manual*:



Programming GPIO

This Appendix gives the illustration of the General Purpose Input and Output pin setting. Sections include: ■ System I/O Ports

C.1 GPIO Register

GPIO Byte Mapping	H/W Pin Name
BITO	GPO0
BIT1	GPO1
BIT2	GPO2
BIT3	GPO3
BIT4	GPI0
BIT5	GPI1
BIT6	GPI2
BIT7	GPI3

For details, please refer to iManager & Software API User Manual.



System Assignments

This appendix gives you the information about the system resource allocation on the SOM-6897 CPU System on Module.

- Sections include:
- System I/O ports
- DMA Channel Assignments
- Interrupt Assignments
- Memory Map

D.1 System I/O Ports

Table D.1: System I/O ports

Table D.1: Systen	
Addr.Range(Hex)	Device
0000-0CF7	PCI Express Root Complex
0020-0021	Programmable interrupt controller
0024-0025	Programmable interrupt controller
0028-0029	Programmable interrupt controller
002C-002D	Programmable interrupt controller
002E-002F	Motherboard resources
0030-0031	Programmable interrupt controller
0034-0035	Programmable interrupt controller
0038-0039	Programmable interrupt controller
003C-003D	Programmable interrupt controller
0040-0043	System timer
004E-004F	Motherboard resources
0050-0053	System timer
0060-0060	Standard PS/2 Keyboard
0061-0061	Motherboard resources
0062-0062	Microsoft ACPI-Compliant Embedded Controller
0063-0063	Motherboard resources
0064-0064	Standard PS/2 Keyboard
0065-0065	Motherboard resources
0066-0066	Microsoft ACPI-Compliant Embedded Controller
0067-0067	Motherboard resources
0070-0070	Motherboard resources
0070-0077	System CMOS/real time clock
0080-0080	Motherboard resources
0092-0092	Motherboard resources
00A0-00A1	Programmable interrupt controller
00A4-00A5	Programmable interrupt controller
00A8-00A9	Programmable interrupt controller
00AC-00AD	Programmable interrupt controller
00B0-00B1	Programmable interrupt controller
00B2-00B3	Motherboard resources
00B4-00B5	Programmable interrupt controller
00B8-00B9	Programmable interrupt controller
00BC-00BD	Programmable interrupt controller
029C-029D	Motherboard resources
02E8-02EF	Communications Port (COM4)
02F8-02FF	Communications Port (COM2)
0378-037F	Printer Port (LPT1)
03E8-03EF	Communications Port (COM3)
03F8-03FF	Communications Port (COM1)
04D0-04D1	Programmable interrupt controller
0680-069F	Motherboard resources
0778-077F	Printer Port (LPT1)
	\ /

Table D.1: Syst	tem I/O ports
0A00-0A0F	Motherboard resources
0A10-0A1F	Motherboard resources
0D00-FFFF	PCI Express Root Complex
164E-164F	Motherboard resources
1800-18FE	Motherboard resources
1854-1857	Motherboard resources
F000-F03F	Intel(R) HD Graphics 520
F040-F05F	Mobile 6th Generation Intel(R) Processor Family I/O SMBUS – 9D23
F060-F07F	Standard SATA AHCI Controller
F080-F083	Standard SATA AHCI Controller
F090-F097	Standard SATA AHCI Controller
FF00-FFFE	Motherboard resources
FFFF-FFFF	Motherboard resources

D.2 DMA Channel Assignments

Table D.2: DMA Channel Assignments	
Channel	Function
3	Printer Port (LPT1)

D.3 Interrupt Assignments

Table D.3: Interrupt Assignments		
Interrupt#	Interrupt Source	
IRQ 0	System Timer	
IRQ 1	Standard PS/2 Keyboard	
IRQ 3	Communications Port (COM2)	
IRQ 4	Communications Port (COM1)	
IRQ 5	Communications Port (COM3)	
IRQ 6	Communications Port (COM4)	
IRQ 8	System CMOS/real time clock	
IRQ 12	Microsoft PS/2 Mouse	
IRQ 14	Motherboard resources	
IRQ 11	Mobile 6th Generation Intel(R) Processor Family I/O Thermal sub- system – 9D31	
IRQ 11	Mobile 6th Generation Intel(R) Processor Family I/O SMBUS – 9D23	
IRQ 16	High Definition Audio Controller	
IRQ 16	Standard SATA AHCI Controller	
IRQ 81~511	Microsoft ACPI-Compliant System	
IRQ FFFFFFB (-5)	Intel(R) Management Engine Interface	
IRQ FFFFFFC (-4)	Intel(R) USB 3.0 eXtensible Host ontroller	

Table D.3: Interrupt Assignments		
IRQ FFFFFFD (-3)	Intel(R) HD Graphics 520	
IRQ FFFFFFE (-2)	Intel(R) I210 Ethernet Connection I219-LM	

D.4 1st MB Memory Map

Table D.4: 1st MB Memory Map		
Addr. Range (Hex)	Device	
0x000A0000-0x000BFFFF	PCI Express Root Complex	
0x9000000-0xDFFFFFF	PCI Express Root Complex	
0xC0000000-0xDEFFFFF	Intel(R) HD Graphics 520	
0xDE000000-0xCFFFFFF	Intel(R) HD Graphics 520	
0xDF000000-0xDF01FFFF	Intel(R) I210 Ethernet Connection I219-LM	
0xDF020000-0xDF02FFFF	High Definition Audio Controller	
0xDF030000-0xDF03FFFF	Intel(R) USB 3.0 eXtensible Host controller	
0xDF040000-0xDF043FFF	High Definition Audio Controller	
0xDF044000-0xDF047FFF	Mobile 6th Generation Intel(R) Processor Family I/O PMC - 9D21	
0xDF048000-0xDF049FFF	Standard SATA AHCI Controller	
0xDF04A000-0xDF04A0FF	Mobile 6th Generation Intel(R) Processor Family I/O SMBUS - 9D23	
0xDF04B000-0xDF04B7FF	Standard SATA AHCI Controller	
0xDF04C000-0xDF04C0FF	Standard SATA AHCI Controller	
0xDF04E000-0xDF04EFFF	Mobile 6th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31	
0xDFFE0000-0xDFFFFFFF	Motherboard resources	
0xE0000000-0xEFFFFFF	Motherboard resources	
0xFD000000-0xFDABFFFF	Motherboard resources	
0xFD000000-0xFE7FFFFF	PCI Express Root Complex	
0xFDAC0000-0xFDACFFFF	Motherboard resources	
0xFDAD0000-0xFDADFFFF	Motherboard resources	
0xFDAE0000-0xFDAEFFFF	Motherboard resources	
0xFDAF0000-0xFDAFFFFF	Motherboard resources	
0xFDB00000-0xFDFFFFFF	Motherboard resources	
0xFE000000-0xFE01FFFF	Motherboard resources	
0xFE028000-0x FE028FFF	Motherboard resources	
0xFE028000-0x FE028FFF	Motherboard resources	
0xFE029000-0x FE029FFF	Motherboard resources	
0xFE036000-0x FE03BFFF	Motherboard resources	
0xFE03D000-0x FE3FFFFF	Motherboard resources	
0xFE40F000-0xFE40FFFF	Intel(R) Management Engine Interface	
0xFE410000-0xFE7FFFFF	Motherboard resources	
0xFED00000-0xFED003FF	High precision event timer	
0xFED00000-0xFED003FF	Motherboard resources	
0xFED00000-0xFED003FF	0xFED00000-0xFED003FF	
0xFED10000-0xFED17FFF	Motherboard resources	

Table D.4: 1st MB Memory Map		
0xFED18000-0xFED18FFF	Motherboard resources	
0xFED19000-0xFED19FFF	Motherboard resources	
0xFED20000-0xFED3FFFF	Motherboard resources	
0xFED45000-0xFED8FFFF	Motherboard resources	
0xFED90000-0xFED93FFF	Motherboard resources	
0xFEE00000-0xFEEFFFF	Motherboard resources	
0xFF000000-0xFFFFFFFFF	Intel(R) 82802 Firmware Hub Device	
0xFF000000-0xFFFFFFFFF	Motherboard resources	



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