NVR-6300S

Network Video Recorder
3.5" Hot-Swappable SATA HDD Tray x 12
2.5" HDD Tray x 1
Gigabit Ethernet x 2
USB3.0 x 4, USB2.0 x 3
VGA x 1, DisplayPort x 1, HDMI x 1

NVR-6300S Manual 1st Ed.
August 4, 2014

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Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

-     1   DVD-ROM for Manual (in PDF Format) and Drivers

-     1   NVR-6300S

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

Contents

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Appendix A I/O Information

| Network Video Recorder | NVR-6300S |

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Boxer/ Industrial System

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○
外壳	×	○	○	○	○	○
中央处理器 与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
电源	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在
    SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出
    SJ/T 11363-2006 标准规定的限量要求。

备注：
一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
二、上述部件物质中央处理器、内存、硬盘、电源为选购品。

Chapter

1

General Information

1.1 Introduction

NVR-6300S adopts the Intel® Core™ i3/ i5/ i7 Processor and equips with Intel® Q87 chipset. Moreover, the system memory features four dual channel DDR3 1600MHz DIMM non-ECC Memory up to 32GB. It deploys two LAN ports that consist of 10/100/1000Base-TX Ethernet RJ-45 ports.

This NVR-6300S supports up to 12 3.5" hot-swappable HDD trays and one 2.5" SATA HDD Tray x 1, Slim Optical Disk Drive x 1. Moreover, the flexible expansion interfaces feature one PCI-E[x16] and one PCI-E[x4] (signal [x2]).   In addition, this model supports up to four USB3.0 ports and three USB2.0 ports.   Furthermore, the NVR-6300S can support three independent displays with one VGA, one DisplayPort and one HDMI.

1.2 Features

- LGA 1150 Socket for 22nm Intel® Core™ i3/i5/i7 Processor, Max. 65W TDP
- Dual-Channel 240-pin DDR3 1600MHz DIMM x 4, Up to 32GB
- 3 Graphic Displays Interface: HDMI x 1, DisplayPort x 1, VGA x 1
- Intel® 10/100/1000Base-TX Ethernet x 2
- SATA x 14, SATA 1~6 Support RAID 0/1/5/10, SATA 7~14: RAID (Optional)
- USB 2.0 x 3, USB 3.0 x 4, Onboard COM Header x 2
- PCI-E [x16] x 1, PCI-E [x4] x 1 (Signal [x2])
- Audio Jack x 3 (Mic-in/Line-in/Line-out)
- Hot-Swappable 3.5" SATA HDD Tray x 12 + Hot-swappable 2.5" SATA HDD Tray x 1, Slim Optical Disk Drive x 1
- Supports PoE Function

1.3 Specifications

System

● CPU	Intel® LGA Socket 1150 with Intel Core™ i3/i5/i7 Processor, Max.TDP: 65W
● Chipset	Intel® Q87
● System Memory	Dual Channel DDR3 1600 DIMM Memory x 4, non-ECC, up to 32GB
● BIOS	AMI BIOS, 128 Mb SPI flash ROM
● H/W Monitoring	CPU Temperature, Voltage, and Fan speed monitoring
● Ethernet	10/100/1000Base-TX, RJ-45 x 2 LAN 1: Intel® PHY I217LM Gigabit LAN (supports AMT 9.0) LAN 2: Intel® I211AT Gigabit LAN
● Watchdog Timer	System reset: 1~255 steps by software programming
● TPM	Infineon SLB9635 TT 1.2 (optional)
● I/O Chip	IT 8728F
● Storage	SATA 6.0 Gb/s x 14 (SATA 1~6: support RAID 0/1/5/10, SATA 7~14: optional RAID support)

● Expansion Slot	PCI-E [x16] x 1 PCI-E [x4] x 1 (Signal [x2])
● Power requirement	ATX standard 24-pin connector x 1, 8-pin +12V connector x 1, CPU fan x 1, System fan with 4-pin wafer x 1, Supports Smart Fan control

Mechanical

● Front Door	Front door cover with lock for HDD security
● Dimension	19" x 23.82" x 6.97" (482.7mm x 605mm x 177 mm)
● Gross Weight	47.3 lb (21.5 Kg)
● Net Weight	31.02 lb (14.1 Kg)

Environmental

● Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
● Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
● Storage Humidity	5%~95%, non-condensing

I/O Connectors

● KB & MS	PS/2 keyboard (purple) x 1 PS/2 mouse (green) x 1
● USB	USB3.0 x 4, USB2.0 x 3

● Serial Port	COM x 2 (Box header 2.0mm x 2)
● Audio	Audio Jack x 3 (Mic-in/ Line-in/ Line-out)
● Display Port	VGA x , DisplayPort x 1, HDMI x 1

Remark: When operating 4K*2K monitor, please use HDMI port ONLY

since NVR-6300S has compatible limitation on Display Port.

Chapter

2

Hardware Installation

2.1 Locations of Jumpers and Connectors of the Main Board
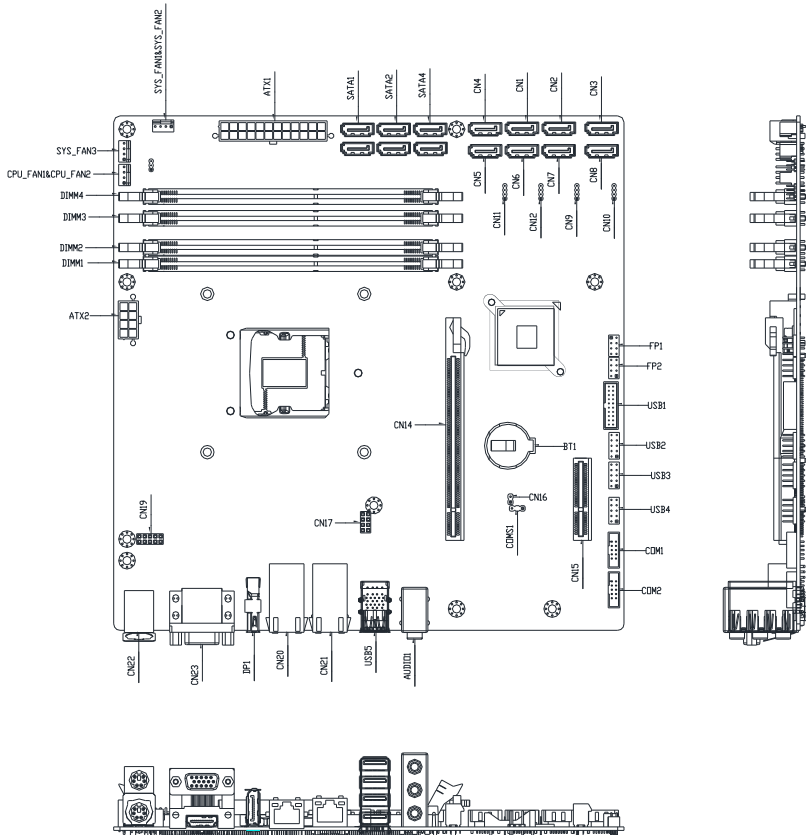
Component side

2.2 Mechanical Drawings of the Main Board

Component side
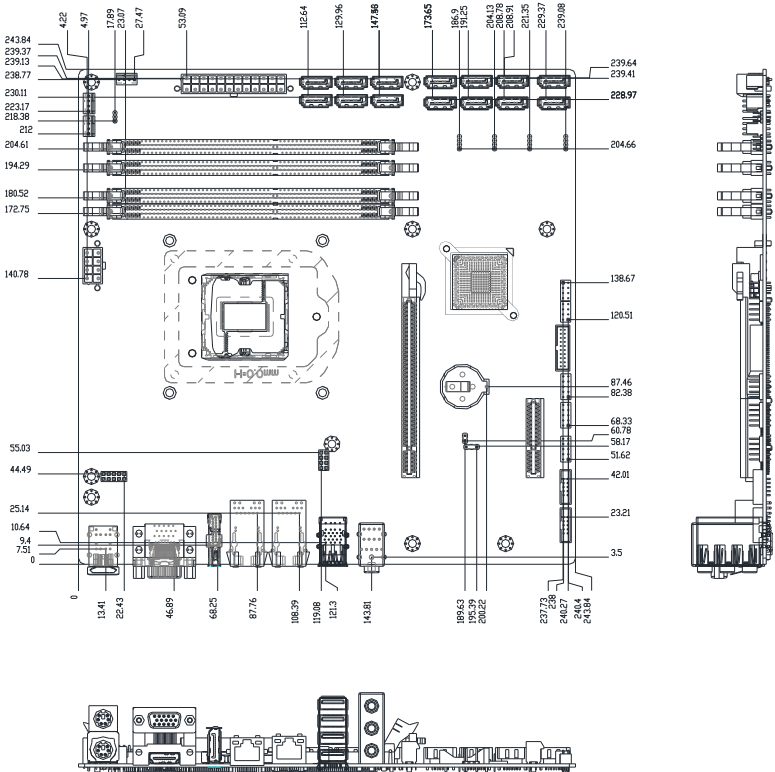
2.3 Mechanical Drawings of NVR-6300S
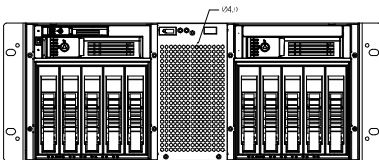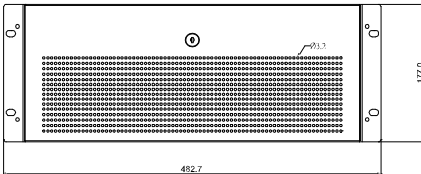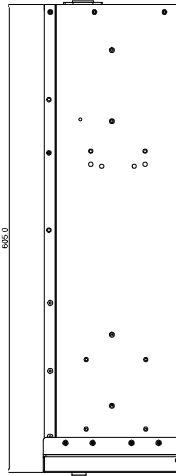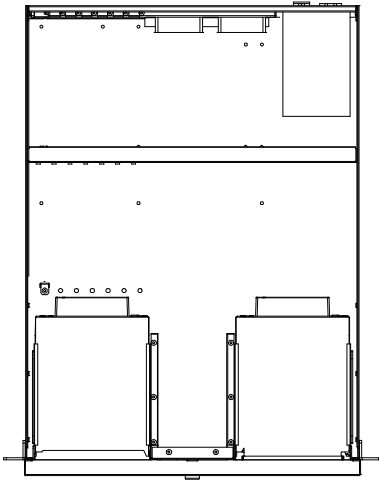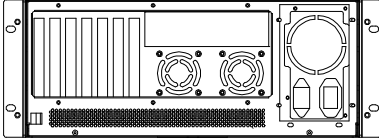
2.4 List of Jumpers of the Main Board

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Label	Function
JP1	AUTO POWER BUTTOM
CMOS1	Clear CMOS

2.5 List of Connectors of the Main Board

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
CN14	PCIEX16 Connector
CN15	PCIEx4 Connector
CN17	POE Signal Connector
CN19	POE Power Connector
CN20	LAN1 Connector
CN21	LAN2 Connector
CN22	PS2 KB/MS Connector
CN23	VGA / HDMI Connector
DP1	Display Port Connector

USB5	USB3+USB2 Connector
AUDIO1	Audio Connector
DIMM1	DDR3 DIMM Slot
DIMM2	DDR3 DIMM Slot
DIMM3	DDR3 DIMM Slot
DIMM4	DDR3 DIMM Slot
BT1	Battery
SATA1~SATA14	SATA Connector
CPU_FAN1	4-Pin Fan Connector
SYS_FAN1	4-Pin Fan Connector
SYS_FAN2	4-Pin Fan Connector
ATX1	24-Pin ATX Power Connector
ATX2	8-Pin ATX Power Connector
USB1	USB3 Connector
USB2	USB2 Connector
USB3	USB2 Connector
USB4	USB2 Connector
COM1	RS-232 Connector
COM2	RS-232 Connector

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip.

To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.

Open   **Closed**   **Closed 2-3**
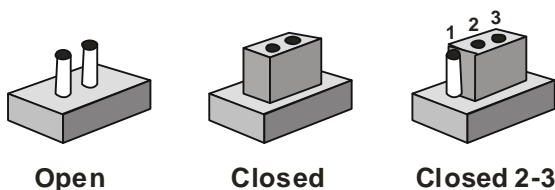
A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.7 Clear CMOS (CMOS1)

CMOS1	Function
1-2	Protected (Default)
2-3	Clear

2.8 Auto Power Button (JP1)

JP1	Function
1-2	Power ON by Button (Default)
2-3	Auto Power ON

2.8 Front Panel Connector (FP1)

Pin	Signal	Pin	Signal
1	Power On Button (+)	2	Reset Switch (+)
3	Power On Button (-)	4	Reset Switch (-)
5	HDD LED (+)	6	Power LED (+)
7	HDD LED (-)	8	Power LED (-)

2.10 Front Panel Connector (FP2)

Pin	Signal	Pin	Signal
1	External Speaker (+)	2	Key Board Lock (+)
3	NC	4	GND
5	Internal Buzzer (-)	6	I2C Bus SMB Clock
7	External Speaker (-)	8	I2C Bus SMB Data

Note: Internal Buzzer Enable: Close Pin 5,7

2.11 USB2.0 Port PIN Header

Pin	Signal	Pin	Signal
1	VCC	2	VCC

3	USBN(0)	4	USBN(1)
5	USBP(0)	6	USBP(1)
7	GND	8	GND
9	NC	10	GND

2.12 USB3.0 Port PIN Header

Pin	Signal	Pin	Signal
1	VCC	20	NC
2	USB3_RX1_DN_C	19	VCC
3	USB3_RX1_DP_C	18	USB3_RX2_DN_C
4	GND	17	USB3_RX2_DP_C
5	USB3_TX1_DN_C	16	GND
6	USB3_TX1_DP_C	15	USB3_TX2_DN_C
7	GND	14	USB3_TX2_DP_C
8	USBP_0N_C	13	GND
9	USBP_0P_C	12	USBP_1N_C
10	NC	11	USBP_1P_C

2.13 Installing the Slim Optical Drive and 3.5" Hard Disk Drive

Step 1: Unfasten the screws on right side and left side

Step 2: Thumb finger touch downward and then push back the rear back

cover

Installation the slim optical drive

Step 1: Use key to open the front bezel

Step 2: Release the four screws

Step 3: Pull back 5-tray HDD bay

Step 4: Remove the slim optical drive bay by pressing buttons on both sides

Step 5: push slim optical drive in to the slim drive bay

Step 6: use a magnetic screwdriver to secure three screws the optical

drive
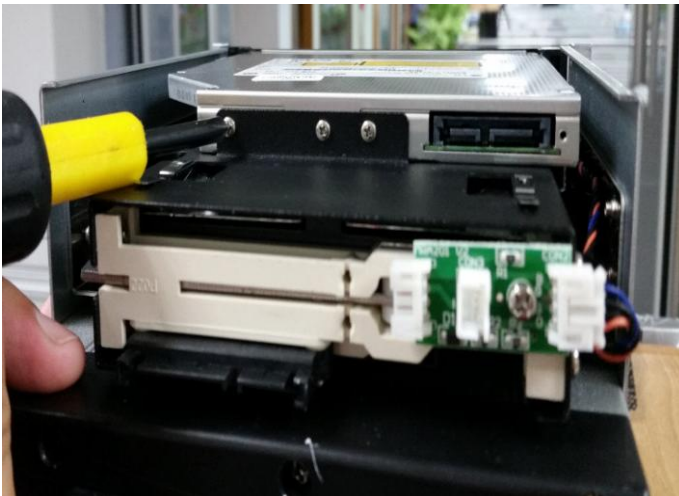
Installation the 3.5" Hard Disk Drive

Step1: insert the 3.5" hard drive to the HDD tray

Step 2: Fasten the four screws to secure the HDD with the HDD tray
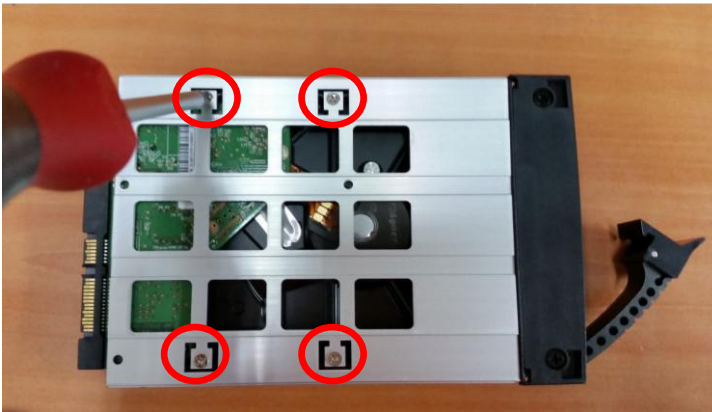
Step 3: Slide the HDD tray into a HDD bay

Step 4: Push the lever to latch the HDD tray

Step 5: Use the key to lock the front bezel

Chapter

3

AMI

BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification
These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:
1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The system configuration is reset by Clear-CMOS jumper
4. The CMOS memory has lost power and the configuration information has been erased.
The NVR-6300S CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del>or <F2> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable disable boot option for legacy network devices.

Chipset

Host bridge parameters.

Boot

Enables/disable quiet boot option.

Security

Set setup administrator password.

Save & Exit

Exit system setup after saving the changes.

Setup Menu

Main

```
          Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
 Main  Advanced  Chipset  Boot  Security  Save & Exit

 BIOS Information                                      Set the Date. Use Tab to
   NVR-6300S R1.0(NV87AM10) (07/14/2014)               switch between Date elements.

 BIOS Vendor                    American Megatrends
 Core Version                   4.6.5.4
 Compliancy                     UEFI 2.3.1; PI 1.2

 System Date                    [Mon 07/14/2014]
 System Time                    [13:05:00]

 Access Level                   Administrator

                                                       ++: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

          Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

Advanced

```
          Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
     Main  Advanced  Chipset  Boot  Security  Save & Exit

  ▶ S5 RTC Wake Settings                              Enable system to wake from S5
  ▶ ACPI Settings                                     using RTC alarm
  ▶ Trusted Computing
  ▶ CPU Configuration
  ▶ SATA Configuration
  ▶ PCH-FW Configuration
  ▶ AMT Configuration
  ▶ USB Configuration
  ▶ Super IO Configuration
  ▶ H/W Monitor

                                                      ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit


          Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```
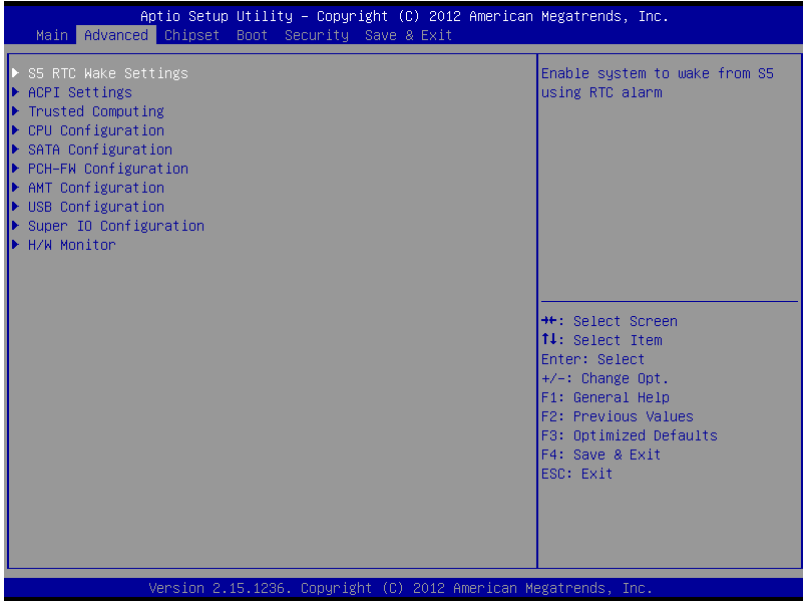
S5 RTC Wake Settings

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
        Advanced

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




                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit




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```

Wake system with Fixed Time

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
         Advanced

    Wake system with Fixed Time          [Enabled]           Enable or disable System wake
    Wake up day                          0                   on alarm event. When enabled,
    Wake up hour                         0                   System will wake on the
    Wake up minute                       0                   hr::min::sec specified
    Wake up second                       0

    Wake system with Dynamic Time        [Disabled]



                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit


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```

Options Summary:

Wake system with Fixed Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.		
Wake up day	0 (Default)	
Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up		
Wake up hour	0 (Default)	

select 0-23 For example enter 3 for 3am and 15 for 3pm		
Wake up minute	0 (Default)	
select 0-59 for minute of an hour.		
Wake up second	0 (Default)	
select 0-59 for second of a minute.		
Wake system with Dynamic Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s)		
Wake up minute increase	0 (Default)	
select 1 - 5 for minute(s).		

Wake system with Dynamic Time

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
        Advanced

    Wake system with Fixed Time        [Disabled]              Enable or disable System wake
                                                               on alarm event. When enabled,
    Wake system with Dynamic Time      [Enabled]               System will wake on the
    Wake up minute increase            1                       current time + Increase
                                                               minute(s)




                                                               →←: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit


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```

Options Summary:

Wake system with Dynamic Time	Disabled	Default
	Enabled	
Enabled or Disabled system wake on alarm event. When enabled, system will wake on the current time + Increase minute(s).		

ACPI Settings

```
          Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
   Advanced

 ACPI Settings                                           Select ACPI sleep state the
 ACPI Sleep State              [S3 only(Suspend to ...]  system will enter when the
                                                         SUSPEND button is pressed.








                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit


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```

Options Summary:

Suspend mode	Supend Disabled	
	S3 (Suspend to RAM)	Default
Select the ACPI state used for System Suspend		

Trusted Computing

```
            Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
      Advanced
 Configuration                                          Enables or Disables BIOS
   Security Device Support          [Disable]           support for security device.
                                                        O.S. will not show Security
                                                        Device. TCG EFI protocol and
 Current Status Information                             INT1A interface will not be
   SUPPORT TURNED OFF                                   available.



                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit


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```

Options Summary:

Security Device Support	Disabled	Default
	Enabled	
Enable or Disable BIOS support for security device.		

CPU Configuration

```
         Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
       Advanced

  CPU Configuration                                      When enabled, a VMM can
                                                         utilize the additional
  Intel(R) Pentium(R) CPU G3320TE @ 2.30GHz              hardware capabilities provided
  CPU Signature                  306c3                   by Vanderpool Technology
  Microcode Patch                17
  Max CPU Speed                  2300 MHz
  Min CPU Speed                  800 MHz
  CPU Speed                      2300 MHz
  Processor Cores                2
  Intel HT Technology            Not Supported
  Intel VT-x Technology          Supported
  Intel SMX Technology           Not Supported
  64-bit                         Supported
                                                         ++: Select Screen
  L1 Data Cache                  32 kB x 2               ↑↓: Select Item
  L1 Code Cache                  32 kB x 2               Enter: Select
  L2 Cache                       256 kB x 2              +/-: Change Opt.
  L3 Cache                       3072 kB                 F1: General Help
                                                         F2: Previous Values
  Intel Virtualization Technology   [Enabled]            F3: Optimized Defaults
  Turbo Mode                        [Enabled]            F4: Save & Exit
                                                         ESC: Exit



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```

Options Summary:

Intel Virtualization	Disabled	
Technology	Enabled	Default
En/Disable Intel Virtualization Technology.		
Turbo Mode	Disabled	
	Enabled	Default
En/Disable Turbo Mode Technology.		

SATA Configuration

```
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            Advanced

   SATA Controller(s)               [Enabled]               Enable or disable SATA Device.
   SATA Mode Selection              [AHCI]

   Serial ATA Port 1                Empty
     Port 1                         [Enabled]
     Hot Plug                       [Enabled]
   Serial ATA Port 2                Empty
     Port 2                         [Enabled]
     Hot Plug                       [Enabled]
   Serial ATA Port 3                Empty
     Port 3                         [Enabled]
     Hot Plug                       [Enabled]
   Serial ATA Port 4                Empty
     Port 4                         [Enabled]               ↔: Select Screen
     Hot Plug                       [Enabled]               ↑↓: Select Item
   Serial ATA Port 5                Empty                   Enter: Select
     Port 1                         [Enabled]               +/-: Change Opt.
     Hot Plug                       [Enabled]               F1: General Help
   Serial ATA Port 6                Empty                   F2: Previous Values
     Port 2                         [Enabled]               F3: Optimized Defaults
     Hot Plug                       [Enabled]               F4: Save & Exit
                                                            ESC: Exit




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```

Options Summary:

SATA Controller(s)	Disabled	
	Enabled	Default
En/Disable SATA Controller(s)		
SATA Mode Selection	IDE	
	AHCI	Default
	RAID	
Determines how SATA controller(s) operate		

PCH-FW Configuration

```
             Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
       Advanced

   ME FW Version              9.0.30.1482
   ME Firmware Mode           Normal Mode
   ME Firmware Type           Full Sku Firmware
   ME Firmware SKU            5MB




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

AMT Configuration

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
        Advanced

 Intel AMT                          [Enabled]              Enable/Disable Intel (R)
 Un-Configure ME                    [Disabled]             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


                                                           ↔: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/–: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



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```

Options Summary:

Intel AMT	Disabled	
	Enabled	Default
Enable/Disable Intel(R) Active Management Technology BIOS Extension.		
Un-Configure ME	Disabled	Default
	Enabled	
OEMFlag Bit 15 : Un-Configure ME without password.		

USB Configuration

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
       Advanced

   USB Configuration                                    Enables Legacy USB support.
                                                        AUTO option disables legacy
   USB Devices:                                         support if no USB devices are
         1 Drive, 2 Hubs                                connected. DISABLE option will
                                                        keep USB devices available
   Legacy USB Support                 [Enabled]         only for EFI applications.




                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit


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```

Options Summary:

Legacy USB Support	Enabled	Default
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected		

Super IO Configuration

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
         Advanced

     Super IO Configuration                                  Set Parameters of Serial Port
                                                             1 (COMA)
     Super IO Chip                    IT8728
   ▶ Serial Port 1 Configuration
   ▶ Serial Port 2 Configuration




                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

Options Summary:

Serial Port 1 Configuration	Disabled	
	Enable	Default
Enabled or Disabled Serial Port(COM).		
Serial Port 2 Configuration	Disabled	
	Enable	Default
Enabled or Disabled Serial Port(COM).		

Serial Port 1 Configuration

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
      Advanced

   Serial Port 1 Configuration                            Enable or Disable Serial Port
                                                          (COM)
   Serial Port                   [Enabled]
   Device Settings               IO=2D8h; IRQ=10;

   Change Settings               [Auto]




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

Serial Port 2 Configuration

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
          Advanced

    Serial Port 2 Configuration                              Enable or Disable Serial Port
                                                             (COM)
    Serial Port                     [Enabled]
    Device Settings                 IO=2C8h; IRQ=11;

    Change Settings                 [Auto]




                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit




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```

Options Summary:

Serial Port	Disabled	
	Enabled	Default
Allows BIOS to En/Disable corresponding serial port.		
Change Settings (Serial Port 1)	Auto	Default
	IO=3F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4,5,7,10,11;	
	IO=2F8h; IRQ=3,4,5,7,10,11;	
	IO=3E8h; IRQ=3,4,5,7,10,11;	
	IO=2E8h; IRQ=3,4,5,7,10,11;	
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 2)	Auto	Default
	IO=2F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,7,10,11;	
	IO=2F8h; IRQ=3,4,5,7,10,11;	
	IO=3E8h; IRQ=3,4,5,7,10,11;	
	IO=2E8h; IRQ=3,4,5,7,10,11;	
Allows BIOS to Select Serial Port resource.		

Pc Health Status

```
          Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
   Advanced

  Pc Health Status                                            Smart Fan function setting

▶ Smart Fan Function

  CPU temperature                     : +46 %
  System temperature                  : +32 %
  CPU Fan1 Speed                      : 1157 RPM
  SYS Fan1 Speed                      : N/A
  SYS Fan2 Speed                      : N/A
  VCore                               : +1.728 V
  V_SM                                : +1.536 V
  +12V                                : +12.090 V
  +5V                                 : +5.100 V            →←: Select Screen
  +5VSB                               : +5.136 V            ↑↓: Select Item
  VBAT                                : +3.024 V            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit


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```

Smart Fan Mode Configuration

```
            Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
      Advanced

 CPU Fan Mode                    [Automatic Mode]        CPU Fan Mode Select
 Fan off temperature limit        15
 Fan start temperature limit      45
 Fan start PWM                     35
 PWM SLOPE SETTING                [8 PWM]
 SYS Fan 1 Mode                   [Automatic Mode]
 Fan off temperature limit        15
 Fan start temperature limit      45
 Fan start PWM                     35
 PWM SLOPE SETTING                [8 PWM]
 SYS Fan 2 Mode                   [Full on Mode]

                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

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```

Options Summary:

CPU Fan Mode	Full Mode	
	Manual Mode by PWM	
	Auto Mode by PWM	Default
CPU Fan Mode Select.		
SYS Fan 1 Mode	Full Mode	
	Manual Mode by PWM	
	Auto Mode by PWM	Default
SYS Fan1 Control Mode.		

SYS Fan 2 Mode	Full Mode	Default
	Manual Mode by PWM	
	Auto Mode by PWM	
SYS Fan 2 Control Mode.		

S5 RTC Wake Settings

```
            Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
    Advanced

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




                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit


            Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.
```

Options Summary:

Wake system with Fixed Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.		
Wake up day	0 (Default)	
Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up		
Wake up hour	0 (Default)	
select 0-23 For example enter 3 for 3am and 15 for 3pm		
Wake up minute	0 (Default)	
select 0-59 for minute of an hour.		
Wake up second	0 (Default)	
select 0-59 for second of a minute.		
Wake system with Dynamic Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s)		
Wake up minute increase	0 (Default)	
select 1 - 5 for minute(s).		

Chipset

```
         Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
      Main  Advanced  Chipset  Boot  Security  Save & Exit

 ▶ System Agent (SA) Configuration              System Agent (SA) Parameters
 ▶ PCH-IO Configuration










                                               ↔: Select Screen
                                               ↑↓: Select Item
                                               Enter: Select
                                               +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit



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```

System Agent (SA) Configuration

```
                Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
                  Chipset

    VT-d Capability              Unsupported           Configure PCIe x16 port Speed
                                                       (B0:D1:F0 Gen1-Gen3)
    PCIe x16 port Speed          [Auto]
    Primary Display              [Auto]
  ▶ Graphics Configuration
  ▶ Memory Information
                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

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```

Options Summary:

PCIe x16 port Speed	Auto	Default
	Gen1	
	Gen2	
	Gen3	
Configure PCIe X16 Port Speed.		
Primary Display	Auto	Default
	IGFX	
	PEG	

Select which of IGFX/PEG/PCI Graphics device should be Primary Display or select

SG for Switchable Gfx.

Graphics Configuration

```
             Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
              Chipset

  Graphics Configuration                                   Keep IGD enabled based on the
                                                           setup options.
  Internal Graphics              [Auto]
  DVMT Total Gfx Mem             [MAX]
  Primary IGFX Boot Display      [VBIOS Default]




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit

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```

Options Summary:

Internal Graphics	Auto	
	Disabled	
	Enabled	Default
Keep IGD enabled based on the setup options.		
DVMT Total Gfx Memory	128M	
	256M	
	Max	Default
Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.		
Primary IGFX Boot	VBIOS Default	Default

Display	CRT	
	HDMI	
	Display Port	
Select the video Device which will be activated during POST.		

Memory Information

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
                  Chipset

  Memory Information

  Memory RC Version            1.7.0.0
  Memory Frequency             1333 Mhz
  Total Memory                 8192 MB (DDR3)
  Memory Voltage               1.50v
  DIMM#0                       8192 MB (DDR3)
  DIMM#1                       Not Present
  DIMM#2                       Not Present
  DIMM#3                       Not Present
  CAS Latency (tCL)            9
  Minimum delay time
     CAS to RAS (tRCDmin)      9
     Row Precharge (tRPmin)    9               →←: Select Screen
     Active to Precharge (tRASmin)  24         ↑↓: Select Item
  XMP Profile 1                Not Supported   Enter: Select
  XMP Profile 2                Not Supported   +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit




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```

Boot

```
                Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
        Main  Advanced  Chipset  Boot  Security  Save & Exit
  ┌─────────────────────────────────────────────────────┬──────────────────────────┐
  │  Boot Configuration                                  │ Enables or disables Quiet Boot │
  │  Quiet Boot                     [Enabled]            │ option                   │
  │                                                      │                          │
  │  Launch I217LM PXE OpROM        [Disabled]           │                          │
  │  Launch WGI211AT PXE OpROM      [Disabled]           │                          │
  │                                                      │                          │
  │  Boot Option Priorities                              │                          │
  │  Boot Option #1                 [SanDisk Cruzer Cros...] │                       │
  │  Boot Option #2                 [UEFI: SanDisk Cruze...] │                       │
  │                                                      │                          │
  │  Hard Drive BBS Priorities                           │                          │
  │                                                      │ ←→: Select Screen        │
  │                                                      │ ↑↓: Select Item          │
  │                                                      │ Enter: Select            │
  │                                                      │ +/-: Change Opt.         │
  │                                                      │ F1: General Help         │
  │                                                      │ F2: Previous Values      │
  │                                                      │ F3: Optimized Defaults   │
  │                                                      │ F4: Save & Exit          │
  │                                                      │ ESC: Exit                │
  └─────────────────────────────────────────────────────┴──────────────────────────┘
                Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

Options Summary:

Quiet Boot	Disabled	
	Enabled	Default
En/Disable showing boot logo.		
Launch I217LM PXE OpROM	Disabled	Default
	Enabled	
En/Disable I217LM PXE OpROM		
Launch WGI211AT PXE OpROM	Disabled	Default
	Enabled	
En/Disable WGI211AT PXE OpROM		

Security

```
              Aptio Setup Utility — Copyright (C) 2012 American Megatrends, Inc.
      Main  Advanced  Chipset  Boot  Security  Save & Exit

     Password Description                                    Set Administrator Password

     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 enter Setup. In Setup the User will
     have Administrator rights.
     The password length must be
     in the following range:
     Minimum length                      3
     Maximum length                      20
                                                             →←: Select Screen
                                                             ↑↓: Select Item
     Administrator Password                                  Enter: Select
     User Password                                           +/−: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

Options summary:

Set User Password/ Set Administrator Password	Not set	
You can install a Master and User password. Before booting to OS, HDD will be set to frozen state. On S3 resume HDD will be unlocked using the HDD Password we entered while system booting. *Install the Password:* Press Enter on this item, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility. *Removing the Password:* Highlight this item and type in the current password.　At the next dialog box press Enter to disable password protection.		

Save & Exit

```
          Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
   Main  Advanced  Chipset  Boot  Security  Save & Exit

  Save Changes and Reset                            Reset the system after saving
  Discard Changes and Reset                         the changes.

  Restore Defaults
  Save as User Defaults
  Restore User Defaults

  Boot Override
  SanDisk Cruzer Crossfire0.1
  UEFI: SanDisk Cruzer Crossfire0.1


                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



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```

Options Summary:

Save Changes and Reset		
Reset the system after saving the changes		
Discard Changes and Reset		
Reset system setup without saving any changes		
Restore Defaults		
Restore/Load Default values for all the setup options.		
Save as User Defaults		
Save the changes done so far as User Defaults		
Restore User Defaults		
Restore the User Defaults to all the setup options		

Chapter

4

Driver Installation

The NVR-6300S comes with an AutoRun DVD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver DVD, the driver DVD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

      Step 1 – Install Chipset Driver

      Step 2 – Install VGA Driver

      Step 3 – Install USB3.0 Driver

      Step 4 – Install LAN Driver

      Step 5 – Install ME Driver

      Step 6 – Install Audio Driver

      Step 7 – Install ASM1061 Driver

      Step 8 – Install IRST Driver

      Step 9 – Install TPM Driver

Please read instructions below for further detailed installations.

3.1   Installation

Insert the NVR-6300S DVD-ROM into the DVD -ROM drive and

install the drivers from Step 1 to Step 9 in order.

Step 1 – Install Chipset Driver

1.   Click on the *Step1 - Chipset* folder and double click on the *SetupChipset_10.0.14.exe* file

2.   Follow the instructions that the window shows

3.   The system will help you install the driver automatically

Step 2 – Install VGA Driver

1.   Click on the *Step2 - Graphic* folder and select the OS your system is

2.   Double click on the *Setup.exe* file located in each OS folder

3.   Follow the instructions that the window shows

4.   The system will help you install the driver automatically

Step 3 – Install USB3.0 Driver

1.   Click on the *Step3 - USB3.0* folder and double click on the *Setup.exe* file

2.   Follow the instructions that the window shows

3.   The system will help you install the driver automatically

Step 4 – Install LAN Driver

1. Click on the ***Step4 - LAN*** folder and select the OS your system is

2. Double click on the ***.exe*** file located in each OS folder

3. Follow the instructions that the window shows

4. The system will help you install the driver automatically

Step 5 – Install ME Driver

1. Click on the ***Step5 - ME*** folder and double click on the ***SETUP.exe*** file

2. Follow the instructions that the window shows

3. The system will help you install the driver automatically

Step 6 – Install Audio Driver

4. Click on the ***Step6 - Audio*** folder and double click on the ***Win7_Win8_Win81_R273.exe*** file

5. Follow the instructions that the window shows

6. The system will help you install the driver automatically

Step 7 – Install ASM1061 Driver

1. Click on the ***Step7 - ASM1061*** folder and double click on the ***setup.exe*** file

2. Follow the instructions that the window shows

3. The system will help you install the driver automatically

Step 8 – Install IRST Driver

1. Click on the ***Step8 - IRST*** folder and double click on the ***SetupRST_12.9.0.1001.exe*** file

2. Follow the instructions that the window shows

3. The system will help you install the driver automatically

Step 9 – Install TPM Driver

1. Click on the ***Step9 - TPM*** folder and double click on the ***Setup.exe*** file

2. Follow the instructions that the window shows

3. The system will help you install the driver automatically

Appendix

A

I/O Information

A.1 I/O Address Map

```
▲ 📑 Input/output (IO)
    🖳 [0000000000000000 - 000000000000001F]  Direct memory access controller
    🖳 [0000000000000000 - 0000000000000CF7]  PCI bus
    🖳 [0000000000000010 - 000000000000001F]  Motherboard resources
    🖳 [0000000000000020 - 0000000000000021]  Programmable interrupt controller
    🖳 [0000000000000022 - 000000000000003F]  Motherboard resources
    🖳 [0000000000000024 - 0000000000000025]  Programmable interrupt controller
    🖳 [0000000000000028 - 0000000000000029]  Programmable interrupt controller
    🖳 [000000000000002C - 000000000000002D]  Programmable interrupt controller
    🖳 [000000000000002E - 000000000000002F]  Motherboard resources
    🖳 [0000000000000030 - 0000000000000031]  Programmable interrupt controller
    🖳 [0000000000000034 - 0000000000000035]  Programmable interrupt controller
    🖳 [0000000000000038 - 0000000000000039]  Programmable interrupt controller
    🖳 [000000000000003C - 000000000000003D]  Programmable interrupt controller
    🖳 [0000000000000040 - 0000000000000043]  System timer
    🖳 [0000000000000044 - 000000000000005F]  Motherboard resources
    🖳 [000000000000004E - 000000000000004F]  Motherboard resources
    🖳 [0000000000000050 - 0000000000000053]  System timer
    ⌨ [0000000000000060 - 0000000000000060]  Standard PS/2 Keyboard
    🖳 [0000000000000061 - 0000000000000061]  Motherboard resources
    🖳 [0000000000000062 - 0000000000000063]  Motherboard resources
    🖳 [0000000000000063 - 0000000000000063]  Motherboard resources
    ⌨ [0000000000000064 - 0000000000000064]  Standard PS/2 Keyboard
    🖳 [0000000000000065 - 0000000000000065]  Motherboard resources
    🖳 [0000000000000065 - 000000000000006F]  Motherboard resources
    🖳 [0000000000000067 - 0000000000000067]  Motherboard resources
    🖳 [0000000000000070 - 0000000000000070]  Motherboard resources
    🖳 [0000000000000070 - 0000000000000077]  System CMOS/real time clock
    🖳 [0000000000000072 - 000000000000007F]  Motherboard resources
    🖳 [0000000000000080 - 0000000000000080]  Motherboard resources
    🖳 [0000000000000080 - 0000000000000080]  Motherboard resources
    🖳 [0000000000000081 - 0000000000000091]  Direct memory access controller
    🖳 [0000000000000084 - 0000000000000086]  Motherboard resources
    🖳 [0000000000000088 - 0000000000000088]  Motherboard resources
    🖳 [000000000000008C - 000000000000008E]  Motherboard resources
    🖳 [0000000000000090 - 000000000000009F]  Motherboard resources
    🖳 [0000000000000092 - 0000000000000092]  Motherboard resources
    🖳 [0000000000000093 - 000000000000009F]  Direct memory access controller
    🖳 [00000000000000A0 - 00000000000000A1]  Programmable interrupt controller
    🖳 [00000000000000A2 - 00000000000000BF]  Motherboard resources
    🖳 [00000000000000A4 - 00000000000000A5]  Programmable interrupt controller
    🖳 [00000000000000A8 - 00000000000000A9]  Programmable interrupt controller
    🖳 [00000000000000AC - 00000000000000AD]  Programmable interrupt controller
    🖳 [00000000000000B0 - 00000000000000B1]  Programmable interrupt controller
    🖳 [00000000000000B2 - 00000000000000B3]  Motherboard resources
    🖳 [00000000000000B4 - 00000000000000B5]  Programmable interrupt controller
    🖳 [00000000000000B8 - 00000000000000B9]  Programmable interrupt controller
    🖳 [00000000000000BC - 00000000000000BD]  Programmable interrupt controller
    🖳 [00000000000000C0 - 00000000000000DF]  Direct memory access controller
    🖳 [00000000000000E0 - 00000000000000EF]  Motherboard resources
```

[00000000000000F0 - 00000000000000F0] Numeric data processor
[00000000000002F8 - 00000000000002FF] Communications Port (COM2)
[0000000000000378 - 000000000000037F] Printer Port (LPT1)
[00000000000003B0 - 00000000000003BB] Intel(R) HD Graphics 4600
[00000000000003C0 - 00000000000003DF] Intel(R) HD Graphics 4600
[00000000000003F8 - 00000000000003FF] Communications Port (COM1)
[00000000000004D0 - 00000000000004D1] Motherboard resources
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[0000000000000680 - 000000000000069F] Motherboard resources
[0000000000000A00 - 0000000000000A1F] Motherboard resources
[0000000000000A20 - 0000000000000A2F] Motherboard resources
[0000000000000A30 - 0000000000000A3F] Motherboard resources
[0000000000000D00 - 000000000000FFFF] PCI bus
[000000000000164E - 000000000000164F] Motherboard resources
[0000000000001800 - 00000000000018FE] Motherboard resources
[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000001C00 - 0000000000001CFE] Motherboard resources
[0000000000001D00 - 0000000000001DFE] Motherboard resources
[0000000000001E00 - 0000000000001EFE] Motherboard resources
[0000000000001F00 - 0000000000001FFE] Motherboard resources
[000000000000A000 - 000000000000AFFF] Intel(R) 8 Series/C220 Series PCI Express Root Port #8 - 8C1E
[000000000000B000 - 000000000000BFFF] Intel(R) 8 Series/C220 Series PCI Express Root Port #7 - 8C1C
[000000000000C000 - 000000000000CFFF] Intel(R) 8 Series/C220 Series PCI Express Root Port #6 - 8C1A
[000000000000D000 - 000000000000DFFF] Intel(R) 8 Series/C220 Series PCI Express Root Port #5 - 8C18
[000000000000E000 - 000000000000EFFF] Intel(R) 8 Series/C220 Series PCI Express Root Port #4 - 8C16
[000000000000F000 - 000000000000F03F] Intel(R) HD Graphics 4600
[000000000000F040 - 000000000000F05F] Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
[000000000000F060 - 000000000000F07F] Intel(R) 8 Series/C220 Chipset Family SATA AHCI Controller
[000000000000F0A0 - 000000000000F0A3] Intel(R) 8 Series/C220 Chipset Family SATA AHCI Controller
[000000000000F0B0 - 000000000000F0B7] Intel(R) 8 Series/C220 Chipset Family SATA AHCI Controller
[000000000000F0C0 - 000000000000F0C3] Intel(R) 8 Series/C220 Chipset Family SATA AHCI Controller
[000000000000F0D0 - 000000000000F0D7] Intel(R) 8 Series/C220 Chipset Family SATA AHCI Controller
[000000000000F0E0 - 000000000000F0E7] Intel(R) Active Management Technology - SOL (COM3)
[000000000000FFFF - 000000000000FFFF] Motherboard resources
[000000000000FFFF - 000000000000FFFF] Motherboard resources
[000000000000FFFF - 000000000000FFFF] Motherboard resources

A.2 Memory Address Map

```
▲ 📶 Memory
    📶 [00000000000A0000 - 00000000000BFFFF]  Intel(R) HD Graphics 4600
    📶 [00000000000A0000 - 00000000000BFFFF]  PCI bus
    📶 [00000000000D0000 - 00000000000D3FFF]  PCI bus
    📶 [00000000000D4000 - 00000000000D7FFF]  PCI bus
    📶 [00000000000D8000 - 00000000000DBFFF]  PCI bus
    📶 [00000000000DC000 - 00000000000DFFFF]  PCI bus
    📶 [00000000000E0000 - 00000000000E3FFF]  PCI bus
    📶 [00000000000E4000 - 00000000000E7FFF]  PCI bus
    📶 [00000000DF200000 - 00000000FEAFFFFF]  PCI bus
    📶 [00000000E0000000 - 00000000EFFFFFFF]  Intel(R) HD Graphics 4600
    📶 [00000000F7400000 - 00000000F77FFFFF]  Intel(R) HD Graphics 4600
    📶 [00000000F7800000 - 00000000F78FFFFF]  Intel(R) 8 Series/C220 Series PCI Express Root Port #8 - 8C1E
    ◇ [00000000F7810000 - 00000000F78101FF]  Asmedia 106x SATA Controller
    📶 [00000000F7900000 - 00000000F79FFFFF]  Intel(R) 8 Series/C220 Series  PCI Express Root Port #7 - 8C1C
    ◇ [00000000F7910000 - 00000000F79101FF]  Asmedia 106x SATA Controller
    📶 [00000000F7A00000 - 00000000F7AFFFFF]  Intel(R) 8 Series/C220 Series  PCI Express Root Port #6 - 8C1A
    ◇ [00000000F7A10000 - 00000000F7A101FF]  Asmedia 106x SATA Controller
    📶 [00000000F7B00000 - 00000000F7BFFFFF]  Intel(R) 8 Series/C220 Series  PCI Express Root Port #5 - 8C18
    ◇ [00000000F7B10000 - 00000000F7B101FF]  Asmedia 106x SATA Controller
    📶 [00000000F7C00000 - 00000000F7C1FFFF]  Intel(R) I211 Gigabit Network Connection
    📶 [00000000F7C00000 - 00000000F7CFFFFF]  Intel(R) 8 Series/C220 Series  PCI Express Root Port #4 - 8C16
    📶 [00000000F7C20000 - 00000000F7C23FFF]  Intel(R) I211 Gigabit Network Connection
    📶 [00000000F7D00000 - 00000000F7D1FFFF]  Intel(R) Ethernet Connection I217-LM
    🖳 [00000000F7D20000 - 00000000F7D2FFFF]  Intel(R) USB 3.0 eXtensible Host Controller
    📶 [00000000F7D30000 - 00000000F7D33FFF]  High Definition Audio Controller
    📶 [00000000F7D39000 - 00000000F7D390FF]  Intel(R) 8 Series/C220 Series  SMBus Controller - 8C22
    💾 [00000000F7D3A000 - 00000000F7D3A7FF]  Intel(R) 8 Series/C220 Chipset Family SATA AHCI Controller
    🖳 [00000000F7D3B000 - 00000000F7D3B3FF]  Intel(R) 8 Series/C220 Series  USB EHCI #1 - 8C26
    🖳 [00000000F7D3C000 - 00000000F7D3C3FF]  Intel(R) 8 Series/C220 Series  USB EHCI #2 - 8C2D
    📶 [00000000F7D3D000 - 00000000F7D3DFFF]  Intel(R) Ethernet Connection I217-LM
    🖳 [00000000F7D3E000 - 00000000F7D3EFFF]  Intel(R) Active Management Technology - SOL (COM3)
    📶 [00000000F7D40000 - 00000000F7D4000F]  Intel(R) Management Engine Interface
    📶 [00000000F7DFD000 - 00000000F7DFFFFF]  Motherboard resources
    📶 [00000000F7FE0000 - 00000000F7FEFFFF]  Motherboard resources
    📶 [00000000F8000000 - 00000000FBFFFFFF]  Motherboard resources
    📶 [00000000FED00000 - 00000000FED003FF]  High precision event timer
    📶 [00000000FED10000 - 00000000FED17FFF]  Motherboard resources
    📶 [00000000FED18000 - 00000000FED18FFF]  Motherboard resources
    📶 [00000000FED19000 - 00000000FED19FFF]  Motherboard resources
    📶 [00000000FED1C000 - 00000000FED1FFFF]  Motherboard resources
    📶 [00000000FED20000 - 00000000FED3FFFF]  Motherboard resources
    📶 [00000000FED40000 - 00000000FED44FFF]  System board
    📶 [00000000FED45000 - 00000000FED8FFFF]  Motherboard resources
    📶 [00000000FED90000 - 00000000FED93FFF]  Motherboard resources
    📶 [00000000FEE00000 - 00000000FEEFFFFF]  Motherboard resources
    📶 [00000000FF000000 - 00000000FFFFFFFF]  Intel(R) 82802 Firmware Hub Device
    📶 [00000000FF000000 - 00000000FFFFFFFF]  Motherboard resources
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A.3 IRQ Mapping Chart

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▲ ▦ Interrupt request (IRQ)
    ⊥▇ (ISA) 0x00000000 (00)   System timer
    ⊂▭ (ISA) 0x00000001 (01)   Standard PS/2 Keyboard
    ⊤▼ (ISA) 0x00000003 (03)   Communications Port (COM2)
    ⊤▼ (ISA) 0x00000004 (04)   Communications Port (COM1)
    ⊥▇ (ISA) 0x00000008 (08)   System CMOS/real time clock
    🖱 (ISA) 0x0000000C (12)   Microsoft PS/2 Mouse
    ⊥▇ (ISA) 0x0000000D (13)   Numeric data processor
    ⊥▇ (ISA) 0x00000051 (81)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000052 (82)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000053 (83)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000054 (84)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000055 (85)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000056 (86)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000057 (87)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000058 (88)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000059 (89)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000005A (90)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000005B (91)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000005C (92)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000005D (93)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000005E (94)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000005F (95)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000060 (96)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000061 (97)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000062 (98)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000063 (99)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000064 (100)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000065 (101)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000066 (102)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000067 (103)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000068 (104)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000069 (105)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000006A (106)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000006B (107)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000006C (108)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000006D (109)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000006E (110)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000006F (111)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000070 (112)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000071 (113)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000072 (114)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000073 (115)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000074 (116)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000075 (117)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000076 (118)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000077 (119)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000078 (120)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x00000079 (121)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000007A (122)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000007B (123)   Microsoft ACPI-Compliant System
    ⊥▇ (ISA) 0x0000007C (124)   Microsoft ACPI-Compliant System
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(ISA) 0x0000007D (125)   Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126)   Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127)   Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128)   Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129)   Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130)   Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131)   Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132)   Microsoft ACPI-Compliant System
(ISA) 0x00000085 (133)   Microsoft ACPI-Compliant System
(ISA) 0x00000086 (134)   Microsoft ACPI-Compliant System
(ISA) 0x00000087 (135)   Microsoft ACPI-Compliant System
(ISA) 0x00000088 (136)   Microsoft ACPI-Compliant System
(ISA) 0x00000089 (137)   Microsoft ACPI-Compliant System
(ISA) 0x0000008A (138)   Microsoft ACPI-Compliant System
(ISA) 0x0000008B (139)   Microsoft ACPI-Compliant System
(ISA) 0x0000008C (140)   Microsoft ACPI-Compliant System
(ISA) 0x0000008D (141)   Microsoft ACPI-Compliant System
(ISA) 0x0000008E (142)   Microsoft ACPI-Compliant System
(ISA) 0x0000008F (143)   Microsoft ACPI-Compliant System
(ISA) 0x00000090 (144)   Microsoft ACPI-Compliant System
(ISA) 0x00000091 (145)   Microsoft ACPI-Compliant System
(ISA) 0x00000092 (146)   Microsoft ACPI-Compliant System
(ISA) 0x00000093 (147)   Microsoft ACPI-Compliant System
(ISA) 0x00000094 (148)   Microsoft ACPI-Compliant System
(ISA) 0x00000095 (149)   Microsoft ACPI-Compliant System
(ISA) 0x00000096 (150)   Microsoft ACPI-Compliant System
(ISA) 0x00000097 (151)   Microsoft ACPI-Compliant System
(ISA) 0x00000098 (152)   Microsoft ACPI-Compliant System
(ISA) 0x00000099 (153)   Microsoft ACPI-Compliant System
(ISA) 0x0000009A (154)   Microsoft ACPI-Compliant System
(ISA) 0x0000009B (155)   Microsoft ACPI-Compliant System
(ISA) 0x0000009C (156)   Microsoft ACPI-Compliant System
(ISA) 0x0000009D (157)   Microsoft ACPI-Compliant System
(ISA) 0x0000009E (158)   Microsoft ACPI-Compliant System
(ISA) 0x0000009F (159)   Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (160)   Microsoft ACPI-Compliant System
(ISA) 0x000000A1 (161)   Microsoft ACPI-Compliant System
(ISA) 0x000000A2 (162)   Microsoft ACPI-Compliant System
(ISA) 0x000000A3 (163)   Microsoft ACPI-Compliant System
(ISA) 0x000000A4 (164)   Microsoft ACPI-Compliant System
(ISA) 0x000000A5 (165)   Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (166)   Microsoft ACPI-Compliant System
(ISA) 0x000000A7 (167)   Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168)   Microsoft ACPI-Compliant System
(ISA) 0x000000A9 (169)   Microsoft ACPI-Compliant System
(ISA) 0x000000AA (170)   Microsoft ACPI-Compliant System
(ISA) 0x000000AB (171)   Microsoft ACPI-Compliant System
(ISA) 0x000000AC (172)   Microsoft ACPI-Compliant System
(ISA) 0x000000AD (173)   Microsoft ACPI-Compliant System
(ISA) 0x000000AE (174)   Microsoft ACPI-Compliant System
(ISA) 0x000000AF (175)   Microsoft ACPI-Compliant System

(ISA) 0x000000B0 (176)   Microsoft ACPI-Compliant System
(ISA) 0x000000B1 (177)   Microsoft ACPI-Compliant System
(ISA) 0x000000B2 (178)   Microsoft ACPI-Compliant System
(ISA) 0x000000B3 (179)   Microsoft ACPI-Compliant System
(ISA) 0x000000B4 (180)   Microsoft ACPI-Compliant System
(ISA) 0x000000B5 (181)   Microsoft ACPI-Compliant System
(ISA) 0x000000B6 (182)   Microsoft ACPI-Compliant System
(ISA) 0x000000B7 (183)   Microsoft ACPI-Compliant System
(ISA) 0x000000B8 (184)   Microsoft ACPI-Compliant System
(ISA) 0x000000B9 (185)   Microsoft ACPI-Compliant System
(ISA) 0x000000BA (186)   Microsoft ACPI-Compliant System
(ISA) 0x000000BB (187)   Microsoft ACPI-Compliant System
(ISA) 0x000000BC (188)   Microsoft ACPI-Compliant System
(ISA) 0x000000BD (189)   Microsoft ACPI-Compliant System
(ISA) 0x000000BE (190)   Microsoft ACPI-Compliant System
(PCI) 0x0000000A (10)   Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
(PCI) 0x00000010 (16)   Asmedia 106x SATA Controller
(PCI) 0x00000010 (16)   Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D
(PCI) 0x00000010 (16)   Intel(R) Management Engine Interface
(PCI) 0x00000011 (17)   Asmedia 106x SATA Controller
(PCI) 0x00000012 (18)   Asmedia 106x SATA Controller
(PCI) 0x00000013 (19)   Asmedia 106x SATA Controller
(PCI) 0x00000013 (19)   Intel(R) Active Management Technology - SOL (COM3)
(PCI) 0x00000016 (22)   High Definition Audio Controller
(PCI) 0x00000017 (23)   Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26
(PCI) 0xFFFFFFEE (-18)   Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFEF (-17)   Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF0 (-16)   Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF1 (-15)   Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF2 (-14)   Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF3 (-13)   Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF4 (-12)   Intel(R) Ethernet Connection I217-LM
(PCI) 0xFFFFFFF5 (-11)   Intel(R) USB 3.0 eXtensible Host Controller
(PCI) 0xFFFFFFF6 (-10)   Intel(R) HD Graphics 4600
(PCI) 0xFFFFFFF7 (-9)   Intel(R) 8 Series/C220 Chipset Family SATA AHCI Controller
(PCI) 0xFFFFFFF8 (-8)   Intel(R) 8 Series/C220 Series PCI Express Root Port #8 - 8C1E
(PCI) 0xFFFFFFF9 (-7)   Intel(R) 8 Series/C220 Series PCI Express Root Port #7 - 8C1C
(PCI) 0xFFFFFFFA (-6)   Intel(R) 8 Series/C220 Series PCI Express Root Port #6 - 8C1A
(PCI) 0xFFFFFFFB (-5)   Intel(R) 8 Series/C220 Series PCI Express Root Port #5 - 8C18
(PCI) 0xFFFFFFFC (-4)   Intel(R) 8 Series/C220 Series PCI Express Root Port #4 - 8C16
(PCI) 0xFFFFFFFD (-3)   Intel(R) 8 Series/C220 Series PCI Express Root Port #1 - 8C10
(PCI) 0xFFFFFFFE (-2)   Intel(R) Xeon(R) processor E3-1200 v3/4th Gen Core processor PCI Express x16 Controller - 0C01

A.4 DMA Channel Assignments

Direct memory access (DMA)
    4   Direct memory access controller