

**ETX-LN**

Onboard Intel® Atom™ D525/N455  
Processor  
DDR3 667/800 Memory  
With LCD, Ethernet, PCI, ISA,  
Audio, SATA, USB2.0, COM

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## Packing List

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

- 4 M2.0 Screw
- 1 CD-ROM for manual (in PDF format) and drivers
- 1 ETX-LN CPU Module

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

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Chapter

1

**General  
Information**

## 1.1 Introduction

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ETX-LN is able to equip with Intel® Atom™ D525/N455 processor and has one 204-pin DDR3 667/800 SODIMM to support system memory up to 4GB. ETX-LN adopts Intel® ICH8M chipset that implements serial technologies with high performance. In addition, ETX-LN accommodates user-friendly expansion interfaces, such as four 32-bit PCI, four 8-bit/16-bit ISA bus, one SMBus and one LPC interfaces.

For the display specifications, ETX-LN integrates Intel® D525/N455 and hardware MPEG2 decoder, and shares system memory up to 256MB/DVMT 4.0. The display of ETX-LN supports CRT and 24-bit single channel LVDS. Moreover, it features one PATA and two SATA 3.0 Gb/s (on module).

If you are looking for an economic, time-saving and high performance solution, ETX-LN definitely is your first choice.



## 1.2 Features

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- Onboard Intel® Atom™ D525/N455 Processor
- Intel® ICH8M
- SODIMM DDR3 667/800 Memory, Max. 4 GB (D525 800 Max. 4GB, N455 667 Max. 2GB)
- 10/100Base-TX Ethernet
- CRT, 18-bit or 24-bit Single Channel LVDS LCD
- High Definition Audio Interface
- SATA 3.0Gb/s x 2 (On Module)
- USB2.0 x 4, COM x 2, LPC x 1
- +5V Only Operation

### 1.3 Specifications

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#### System

- CPU Onboard Intel® Atom™ D525/N455 Processor
- Memory 204-pin DDR3 SODIMM x 1, Max. 4 GB (DDR3 667 Max. 2 GB for N455 and DDR3 800 Max. 4 GB for D525)
- Chipset Intel® ICH8M
- I/O Chipset Winbond W83627DHG-P
- Ethernet Realtek RTL8105E-VL-CG, 10/100Base-TX
- BIOS AMI BIOS, SPI type, 4 MB ROM
- Wake on LAN Optional
- Watchdog Timer Generates a Time-out System Reset
- H/W Status Monitoring Supports Power Supply Voltages, Fan Speed and Temperatures Monitoring
- Expansion Interface 32-bit PCI x 4  
8-bit/16-bit ISA Bus x 4  
SMBus x 1  
LPC x 1
- Battery Lithium battery
- Power Supply Voltage +5V DC
- Board Size 4.5"(L) x 3.74"(W) (114mm x 95mm)
- Gross Weight 0.66lb (0.3kg)

- Operating Temperature 32°F~140°F (0°C~60°C)
- Storage Temperature -40°F~176°F (-40°C~80°C)
- Operating Humidity 0%~90% relative humidity, non-condensing

**Display: Supports CRT/LCD simultaneous/ dual view displays**

- Chipset Intel® D525/N455 integrated  
Integrates hardware MPEG2 decoder
- Memory Shared system memory up to 256MB/  
DVMT 4.0
- Resolution Up to 2048x1536 @ 60Hz for D525 for  
CRT;  
Up to 1400x1050 @ 60Hz for N455 for  
CRT;  
Up to 1366x768 or 1280x800@60Hz for  
LCD
- LCD Interface 18-bit or 24-bit single channel LVDS

**I/O**

- Storage PATA x 1 (two devices), SATA3.0Gb/s x  
2 (on module)
- USB USB2.0 x 4
- Audio Mic-in, Line-in, Line-out

Chapter

2

**Quick  
Installation  
Guide**

## 2.1 Safety Precautions

---

**Warning!**

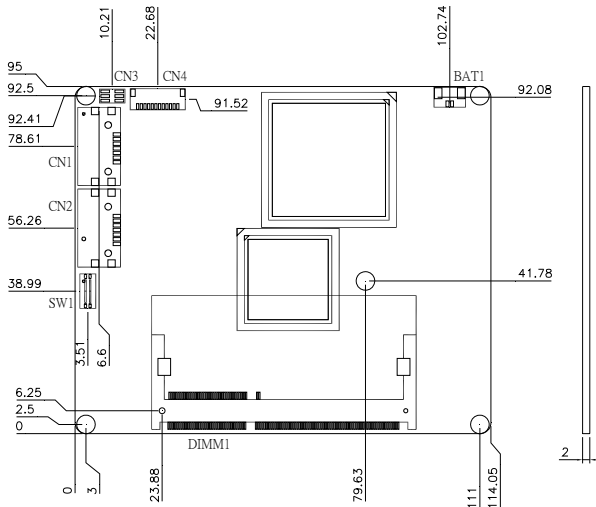
*Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.*

**Caution!**

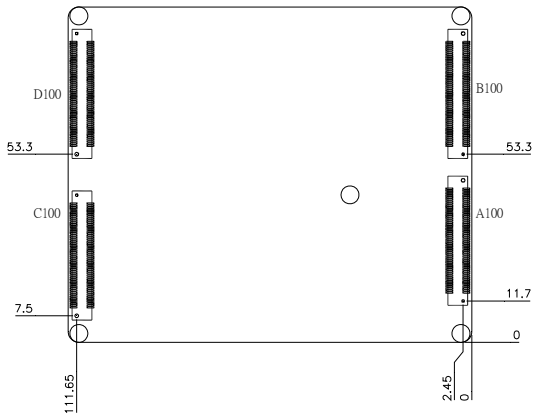
*Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis*

## 2.2 Jumpers and Connectors / Mechanical Drawings

### Component Side



### Solder Side



## 2.3 List of Jumpers

---

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:

<b>Label</b>	<b>Function</b>
SW1	AT_ATX selection/LVDS backlight level Selection

## 2.4 List of Connectors

---

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 the board's connectors:

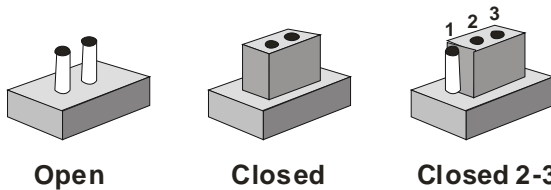
<b>Label</b>	<b>Function</b>
CN1	SATA Connector
CN2	SATA Connector
CN3	CPLD Download header
CN4	LPC Connector
BAT1	Battery Connector
DIMM1	DDR3 SODIMM connector

## 2.5 Setting Jumpers

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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.



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.



## 2.6 AT\_ATX selection/LVDS backlight level Selection (SW1)

SW1	Function
1 On	AT power mode
1 Off	ATX power mode (Default)
2 On	BKTLEN#
2 Off	BKTLEN (Default)

## 2.7 SATA Connector (CN1, CN2)

Standard SATA Connector

## 2.8 CPLD Download Header (CN3)

Standard CPLD Download Header

## 2.9 LPC Connector (CN4)

Pin	Signal
1	LPC AD0
2	LPC AD1
3	LPC AD2
4	LPC AD3
5	+3.3V
6	LPC FRAME#
7	RESET#
8	GND
9	LPC Clock
10	LPC DRQ0
11	LPC DRQ1

---

12	SERIRQ
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### 2.10 CMOS Battery Connector (BAT1)

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Pin	Signal
1	Battery power (+3.0V)
2	GND

---

### 2.11 DDR3 SODIMM Connector (DIMM1)

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Standard DDR3 SODIMM Connector

## Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

## AAEON Main Board/ Daughter Board/ Backplane

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	×	○	○	○	○	○
<p><b>O:</b> 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。</p> <p><b>X:</b> 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。</p> <p>备注: 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。</p>						

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 ETX-LN 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

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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/disables quiet boot option.

### Security

Set setup administrator password.

### Save & Exit

Exit system setup after saving the changes.

## Setup Menu

### Setup submenu: Main

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Main Advanced Chipset Boot Security Save & Exit

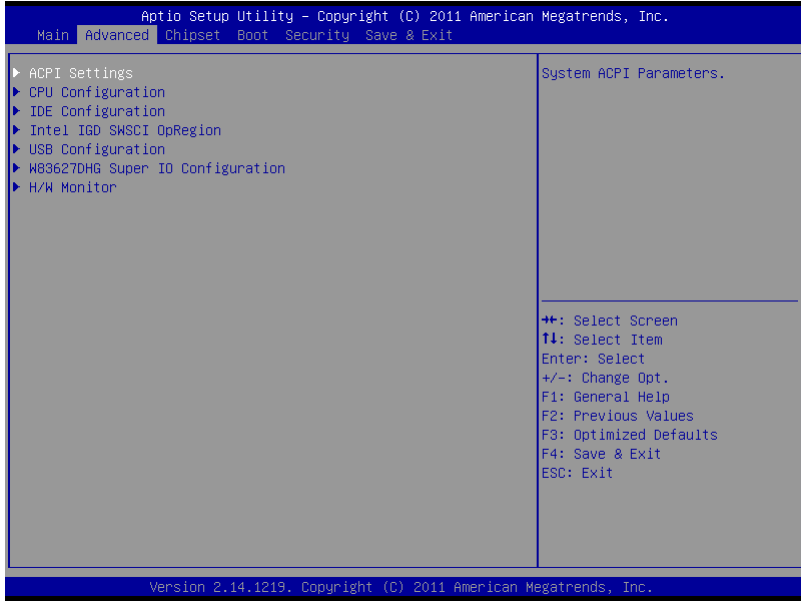
<p>BIOS Information ETX-LN RX.X(ETLNAMXX) (MM/DD/YYYY)</p> <p>BIOS Vendor American Megatrends Core Version 4.6.4.1 Compliance UEFI 2.1</p> <p>System Date [Thu 01/01/2009] System Time [00:05:05]</p> <p>Access Level Administrator</p>	<p>Set the Date. Use Tab to switch between Data elements.</p> <p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</p>
---	---

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#### Options summary: **(default setting)**

System Date	Day MM:DD:YYYY	
Change the month, year and century. The 'Day' is changed automatically.		
System Time	HH : MM : SS	
Change the clock of the system.		

### Setup submenu: Advanced



Options summary: **(default setting)**

ACPI Settings		
System ACPI Parameters		
CPU Configuration		
CPU Configuration Parameters		
IDE Configuration		
IDE Device Options Settings		
Intel IGD SWSCI OpRegion		
Intel IGD SWSCI OpRegion Function		
USB Configuration		



USB Configuration Parameters		
W83627DHG Super IO Configuration		
System Super IO Chip Parameters		
H/W Monitor		
Monitor hardware status		

## ACPI Settings

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Advanced

<p>ACPI Settings</p> <p>Enable Hibernation [Enabled]</p> <p>ACPI Sleep State [S3 (Suspend to RAM)]</p> <p>Make On Ring [Enabled]</p> <p>▶ RTC Wake Settings</p>	<p>Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.</p>
	<p>++: Select Screen                  T↓: Select Item                  Enter: Select                  +/-: Change Opt.                  F1: General Help                  F2: Previous Values                  F3: Optimized Defaults                  F4: Save &amp; Exit                  ESC: Exit</p>

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Options summary: **(default setting)**

Enable Hibernation	<b>Enabled</b>	
	Disabled	

Enabled or disabled hibernate (OS/S4 Sleep State).

ACPI Sleep State	Suspend Disabled	
	S1 only(CPU Stop Clock)	
	<b>S3 only(Suspend to RAM)</b>	

Select the ACPI state used for System Suspend

Wake on Ring	<b>Enabled</b>	
	Disabled	

Enabled or disabled wake on ring function.

RTC Wake Settings		
-------------------	--	--

Enable system to wake from S5 using RTC alarm.

### RTC Wake Settings

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Advanced

<p>Wake system with Fixed Time [Enabled]</p> <p>Wake up hour 0</p> <p>Wake up minute 0</p> <p>Wake up second 0</p> <p>Wake system with Dynamic Time [Disabled]</p> <p>Wake up minute increase 1</p>	<p>Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified</p>          <p>                     ++: Select Screen                      ↑: Select Item                      Enter: Select                      +/-: Change Opt.                      F1: General Help                      F2: Previous Values                      F3: Optimized Defaults                      F4: Save &amp; Exit                      ESC: Exit                 </p>
--	---

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Options summary: (*default setting*)

Wake system with Fixed Time	<b>Disabled</b>	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up hour	0-23	
Wake up minute	0-59	
Wake up second	0-59	
Wake system with Dynamic Time	<b>Disabled</b>	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

## CPU Configuration

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Advanced

CPU Configuration		Enable or Disable Intel(R) SpeedStep(tm)
Processor Type	Intel(R) Atom(TM) CPU	+/: Select Screen ↑↓: Select Item Enter: Select +/=: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
EMT64	Supported	
Processor Speed	1667 MHz	
System Bus Speed	667 MHz	
Ratio Status	10	
Actual Ratio	10	
System Bus Speed	667 MHz	
Processor Stepping	106ca	
Microcode Revision	263	
L1 Cache RAM	56 k	
L2 Cache RAM	512 k	
Processor Core	Single	
Hyper-Threading	Supported	
Intel SpeedStep	[Enabled]	
Hyper-Threading	[Enabled]	
C-States	[Enabled]	

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Options summary: (**default setting**)

Hyper-Threading	Disabled	
	<b>Enabled</b>	
En/Disable CPU Hyper-Threading function		
Intel SpeedStep	Disabled	
	<b>Enabled</b>	
Enable or Disable Intel® SpeedStep™		
C-States	Disabled	
	<b>Enabled</b>	
Enable or Disable C2 and above		

## IDE Configuration

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Advanced

PATA Master	Drive ModelName	PATA UltraDMA Enable/Disable
PATA Slave	Drive ModelName	
SATA Port1	Drive ModelName	
SATA Port2	Drive ModelName	
PATA UltraDMA Mode	[UDMA/33]	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
ATA Or IDE Configuration	[Enhanced]	
Configure SATA As	[IDE]	

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Options summary: (**default setting**)

PATA UltraDMA Mode	Disabled	
	<b>UDMA/33</b>	
	UDMA/66 or Higher	
PATA UltraDMA Enable/Disable		
ATA Or IDE Configuration	Disabled	
	Compatible	
	<b>Enhanced</b>	
Select ATA or IDE configuration		
Legacy IDE Channels	SATA Only	

	<b>SATA Pri, PATA Sec</b>	
	PATA Only	
(Available in Compatible mode) Select Legacy IDE Channels configuration.		
Configure SATA as	<b>IDE</b>	
	AHCI	
(Available in Enhanced mode) Configure SATA controller operating as IDE/AHCI mode.		
Port1/Port2 Speed Limit	<b>No Limit</b>	
	GEN1 Rate	
	GEN2 Rate	
(Available in AHCI mode) Select Port1/Port2 AHCI speed limit.		

### Intel IGD SWSCI OpRegion

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Advanced

<p>Intel IGD SWSCI OpRegion Configuration</p> <p>DVMT Mode Select [DVMT Mode]                  DVMT/FIXED Memory [256MB]                  IGD - Boot Type [CRT + LFP]                  LCD Panel Type [800x600 LVDS]                  LVDS Output Format [24-Bit]                  LVDS Backlight Level [ 80%]                  Backlight Control Type [Normal]</p>	<p>Select DVMT Mode/Fixed Mode</p> <hr/> <p>+/: Select Screen                  ↑: Select Item                  Enter: Select                  +/-: Change Opt.                  F1: General Help                  F2: Previous Values                  F3: Optimized Defaults                  F4: Save &amp; Exit                  ESC: Exit</p>
---	---

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Options summary: **(default setting)**

DVMT Mode Select	Fixed Mode	
	<b>DVMT Mode</b>	
Select DVMT Mode/Fixed Mode		
DVMT/FIXED Memory	128MB	
	<b>256MB</b>	
	Maximum	
Select DVMT/FIXED Mode Memory size used by Internal Graphics Device.		
IGD - Boot Type	CRT	
	LVDS	

	<b>CRT + LFP</b>	
Select the Vide Device which will be activated during POST. This has no effect if external graphics present.		
LCD Panel Type	<b>800x600</b> <b>LVDS</b>	
	1024x768    LVDS	
	800x480    LVDS	
	1366x768    LVDS	
	1280x800    LVDS	
Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item		
LVDS Output Format	18-Bit	
	<b>24-Bit</b>	
Select output format of LVDS		
LVDS Backlight Level	100%	
	90%	
	<b>80%</b>	
	70%	
	60%	
	50%	
	40%	
	30%	
	20%	
	10%	
	0%	



Select Backlight Level

Backlight Control Type

**Normal**

Inverted

Select Backlight control type.

Inverted: Brightest for low PWM duty cycle and voltage.

Normal: Brightest for high PWM duty cycle and voltage.

## USB Configuration

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Advanced

<p>USB Configuration</p> <p>USB Devices: 1 Drive, 1 Keyboard, 1 Mouse</p> <p>Legacy USB Support [Enabled]</p> <p>Mass Storage Devices: USB Device Modelname [Auto]</p>	<p>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.</p> <hr/> <p>                     ++: Select Screen                      T↓: Select Item                      Enter: Select                      +/-: Change Opt.                      F1: General Help                      F2: Previous Values                      F3: Optimized Defaults                      F4: Save &amp; Exit                      ESC: Exit                 </p>
--	---

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Options summary: **(default setting)**

Legacy USB Support	<b>Enabled</b>	
	Disabled	

	Auto	
<p>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. DISABLE option will keep USB devices available only for EFI application</p>		
Device Name (Emulation Type)	<b>Auto</b>	
	Floppy	
	Forced FDD	
	Hard Disk	
	CD-ROM	
<p>If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)</p>		



### Serial Port 1 Configuration

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Advanced

Serial Port 1 Configuration  Serial Port [Enabled] Device Settings IO=3F8h; IRQ=4;  Change Settings [Auto]	Enable or Disable Serial Port (COM)       ⇧+: 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: (**default setting**)

Serial Port	Disabled	
	<b>Enabled</b>	
En/Disable specified serial port.		
Change Settings	<b>Auto</b>	
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	
	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	

Select a resource setting for Super IO device.

### Serial Port 2 Configuration

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Advanced

Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=2F8h; IRQ=3;	
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: **(default setting)**

Serial Port	Disabled	
	<b>Enabled</b>	
En/Disable specified serial port.		
Change Settings	<b>Auto</b>	
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		

### Parallel Port Configuration

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Advanced

<p>Parallel Port Configuration</p> <p>Parallel Port [Enabled]</p> <p>Device Settings IO=378h; IRQ=5;</p> <p>Change Settings [Auto]</p> <p>Device Mode [STD Printer Mode]</p>	<p>Enable or Disable Parallel Port (LPT/LPTE)</p>          <p>                     ++: Select Screen                      ↑↓: Select Item                      Enter: Select                      +/-: Change Opt.                      F1: General Help                      F2: Previous Values                      F3: Optimized Defaults                      F4: Save &amp; Exit                      ESC: Exit                 </p>
--	--

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Options summary: **(default setting)**

Parallel Port	Disabled	
	<b>Enabled</b>	
En/Disable Parallel Port (LPT/LPTE)		
Change Settings	<b>Auto</b>	
	IO=378h; IRQ=5;	

	IO=378h; IRQ=5,7,10,11,12;	
	IO=278h; IRQ=5,7,10,11,12;	
	IO=3BCh; IRQ=5,7,10,11,12;	
	IO=378h;	
	IO=278h;	
	IO=3BCh;	

Select an optimal setting for Super IO device.

Device Mode	<b>STD Printer Mode</b>	
	SPP Mode	
	EPP-1.9 and SPP Mode	
	EPP-1.7 and SPP Mode	
	ECP Mode	
	ECP and EPP 1.9 Mode	
	ECP and EPP 1.7 Mode	

Select the Printer Port mode.

## H/W Monitor

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Advanced

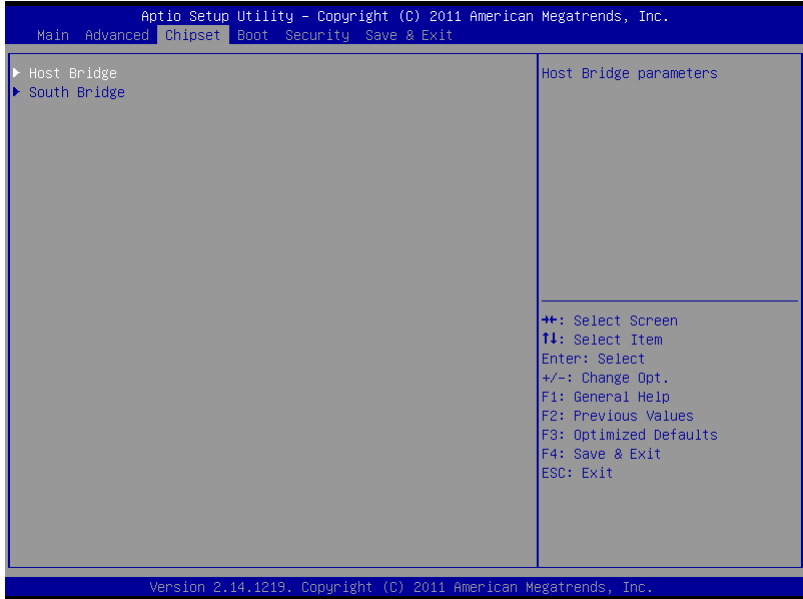
Pc Health Status	
SYSTEM temperature	: +47 C
CPU temperature	: +24 C
SB temperature	: +36 C
CPU Fan Speed	: 5037 RPM
CPUVCCORE	: +1.088 V
(+) 1.5V	: +1.520 V
(+) 5V	: +5.024 V
(+) DDR	: +1.528 V
(+) 3.3V	: +3.344 V
3VSB	: +3.344 V
VBAT	: +3.292 V

+\*: 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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## Setup submenu: Chipset

Options summary: (**default setting**)

Host Bridge		
Host Bridge Parameters		
South Bridge		
South Bridge Parameters		

## Host Bridge

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Chipset

▶ OnChip VGA Configuration MMIO Size [1GB]  Initiate Graphic Adapter [IGD]  ***** Memory Information ***** Memory Frequency 667 Mhz  Total Memory 2048 MB  DIMM#0 2048 MB		Config On Chip VGA Settings.          ⇧+: Select Screen ⇧1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
---	--	--

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

Options summary: **(default setting)**

OnChip VGA Configuration		
Configure Fixed Graphics Memory Size		
MMIO Size	<b>1GB</b>	
	2GB	
Set reserver memory size for MMIO		
Initiate Graphic Adapter	<b>IGD</b>	
	PCI/IGD	
Select which graphics controller to use as the primary boot device.		

### South Bridge

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Chipset

HD Audio Controller	[Enabled]	HD Audio Controller
USB Function	[Enabled]	
USB 2.0(EHCI) Support	[Enabled]	
SMBus Controller	[Enabled]	
LAN Controller	[Enabled]	
Power Mode	[ATX Type]	

++: 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: **(default setting)**

HD Audio Controller	<b>Enabled</b>	
	Disabled	
Enable or Disable HD Audio Controller		
USB Function	Disabled	
	<b>Enabled</b>	
Enable or Disable USB Function		
USB 2.0(EHCI) Support	<b>Enabled</b>	
	Disabled	
Enable or Disable USB 2.0(EHCI) Support.		

SMBus Controller	<b>Enabled</b>	
	Disabled	
Enable or Disable onchip SMBus Controller.		
LAN Controller	<b>Enabled</b>	
	Disabled	
Enable or Disable onboard LAN Controller.		
Power Mode	<b>ATX Type</b>	
	AT Type	
Select the power type used on the system		

**Setup submenu: Boot**

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Main Advanced Chipset **Boot** Security Save & Exit

Boot Configuration Quiet Boot [Enabled] Launch LAN PXE OpROM [Disabled]	Enables or disables Quiet Boot option
Boot Option Priorities Boot Option #1 [Device Modelname] Boot Option #2 [Device Modelname] Boot Option #3 [Device Modelname] Boot Option #4 [Device Modelname] Boot Option #5 [Device Modelname]	
CD/DVD ROM Drive BBS Priorities Hard Drive BBS Priorities Floppy Drive BBS Priorities Network Device BBS Priorities	⇧+: Select Screen ⇧1: 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: (**default setting**)

Quiet Boot	Disabled	
	<b>Enabled</b>	
En/Disable showing boot logo.		
Launch LAN PXE OpROM	<b>Disabled</b>	
	Enabled	
En/Disable PXE boot for RTL8111E LAN		
Boot Option #X/ XXXX Drive BBS Priorities		
The order of boot priorities.		

## BBS Priorities

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Boot

Boot Option #1 [Device Modelname] Boot Option #2 [Device Modelname] Boot Option #3 [Device Modelname] Boot Option #4 [Device Modelname] Boot Option #5 [Device Modelname] Boot Option #6 [Device Modelname]	Sets the system boot order
	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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

Options summary: (**default setting**)

Boot Option #x	Disabled	
	Device name	
Sets the system boot order		

**Setup submenu: Security**

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

<p>Password Description</p> <p>If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.</p> <p>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.</p> <p>The password length must be in the following range:</p> <table> <tr> <td>Minimum length</td> <td>3</td> </tr> <tr> <td>Maximum length</td> <td>20</td> </tr> </table> <p>Administrator Password User Password</p>	Minimum length	3	Maximum length	20	<p>Set Administrator Password</p> <hr/> <p>                     ++: Select Screen                      ↑↓: Select Item                      Enter: Select                      +/-: Change Opt.                      F1: General Help                      F2: Previous Values                      F3: Optimized Defaults                      F4: Save &amp; Exit                      ESC: Exit                 </p>
Minimum length	3				
Maximum length	20				

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

Options summary: **(default setting)**

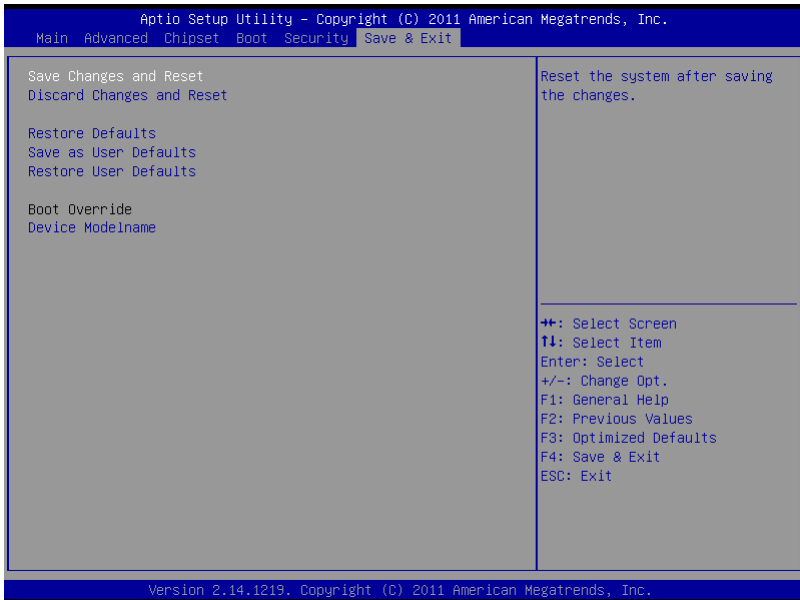
Administrator Password/	<b>Not set</b>	
User Password		
<p>You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.</p>		

*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.

**Setup submenu: Exit**

Options summary: (*default setting*)

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		
Boot Override		
Boot to specified device.		



Chapter

4

**Driver  
Installation**

The ETX-LN comes with a CD-ROM that contains all drivers and utilities that meet your needs.

***Follow the sequence below to install the drivers:***

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install Audio Driver

Step 4 – Install LAN Driver

Step 5 – Install AHCI Driver

Please read instructions below for further detailed installations.

## 4.1 Installation:

---

Insert the ETX-LN CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

### Step 1 – Install Chipset Driver

1. Click on the **STEP1-CHIPSET** folder and select the folder of OS your system is
2. Double click on the **infinst\_autol.exe** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

### Step 2 – Install VGA Driver

1. Click on the **STEP2-VGA** folder and select the folder of 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 Audio Driver

1. Click on the **STEP3-AUDIO** folder and select the folder of 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 4 – Install LAN Driver

1. Click on the **STEP4-LAN** folder and select the folder of 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 5 – Install AHCI Driver

Please refer to Appendix C AHCI Setting

Note: AHCI driver is only needed when SATA configured as AHCI mode during Windows XP installation.

After OS installation:

1. Click on the STEP5-AHCI folder and click on Intel RST folder
2. Double click on the setup.exe file located in the folder
3. Follow the instructions that the windows shows
4. The system will help you install the driver automatically

Appendix

**A**

# Programming the Watchdog Timer

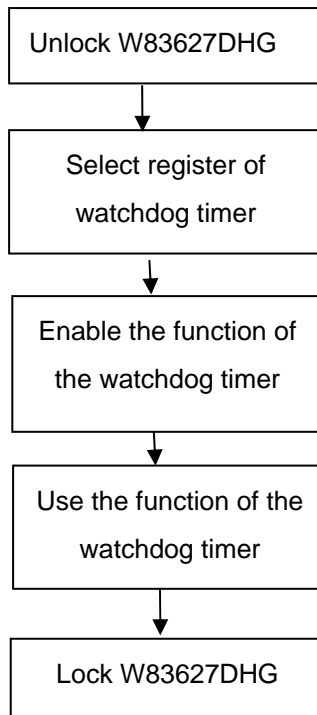
## A.1 Programming

---

ETX-LN utilizes W83627DHG-P chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

### Configuring Sequence Description



There are three steps to complete the configuration setup:

- (1) Enter the W83627DHG config Mode
- (2) Modify the data of configuration registers

- (3) Exit the W83627DHG config Mode. Undesired result may occur if the config Mode is not exited normally.

### (1) Enter the W83627DHG config Mode

To enter the W83627DHG config Mode, two special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform two write operations to the Special Address port (2EH). The different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h,87h:	2Eh	2Fh

### (2) Modify the Data of the Registers

All configuration registers can be accessed after entering the config Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

### (3) Exit the W83627DHG config Mode

The exit key is provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
0aah:	2Eh	2Fh

### WatchDog Timer Register I (Index=F5h, Default=00h)

#### CRF5 (PLED and KBC P20 Control Mode Register)

**Bit 7-5** : select PLED mode

= 000 Power LED pin is driven high.

= 001 Power LED pin outputs 0.5Hz pulse with 50% duty cycle.

= 010 Power LED pin is driven low.

= 011 Power LED pin outputs 2Hz pulse with 50% duty cycle.

= 100 Power LED pin outputs 1Hz pulse with 50% duty cycle.

= 101 Power LED pin outputs 4Hz pulse with 50% duty cycle.

= 110 Power LED pin outputs 0.25Hz pulse with 50% duty cycle.

=111 Power LED pin outputs 0.25Hz pulse with 50% duty cycle..

**Bit 4** : WDTO# count mode is 1000 times faster.

= 0 Disable.

= 1 Enable.

**Bit 3** : select WDTO# count mode.

= 0 second

= 1 minute

**Bit 2** : Enable the rising edge of keyboard Reset (P20) to force Time-out event.

= 0 Disable

= 1 Enable

**Bit 1** : Disable / Enable the WDTO# output low pulse to the KBRST# pin (PIN60)

= 0 Disable

= 1 Enable

**Bit 0** : Reserved.



**WatchDog Timer Register II (Index=F6h, Default=00h)**

- Bit 7-0** = 0 x 00 Time-out Disable  
 = 0 x 01 Time-out occurs after 1 second/minute  
 = 0 x 02 Time-out occurs after 2 second/minutes  
 = 0 x 03 Time-out occurs after 3 second/minutes  
 .....  
 = 0 x FF Time-out occurs after 255 second/minutes

**WatchDog Timer Register III (Index=F7h, Default=00h)**

- Bit 7** : Mouse interrupt reset Enable or Disable  
 = 1 Watchdog Timer is reset upon a Mouse interrupt  
 = 0 Watchdog Timer is not affected by Mouse interrupt
- Bit 6** : Keyboard interrupt reset Enable or Disable  
 = 1 Watchdog Timer is reset upon a Keyboard interrupt  
 = 0 Watchdog Timer is not affected by Keyboard interrupt
- Bit 5** : Force Watchdog Timer Time-out. Write Only

- = 1 Force Watchdog Timer time-out event: this bit is self-clearing
- Bit 4** : Watchdog Timer Status. R/W

  - = 1 Watchdog Timer time-out occurred
  - = 0 Watchdog Timer counting
- Bit 3-0** : These bits select IRQ resource for Watchdog. Setting of 2 selects SMI.

## A.2 W83627DHG Watchdog Timer Initial Program

---

Example: Setting 10 sec. as Watchdog timeout interval

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Mov dx,2eh           ;Enter W83627DHG config mode
```

```
Mov al,87h          (out 87h to 2eh twice)
```

```
Out dx,al
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Mov al,07h
```

```
Out dx,al
```

```
Inc dx
```

```
Mov al,08h          ;Select Logical Device 8 (GPIO Port  
2)
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Dec dx
```

```
Mov al,30h          ;CR30 (GP20~GP27)
```

```
Out dx,al
```

```
Inc dx
```

```
Mov al,01h          ;Activate GPIO2
```

```
Out dx,al
```

```

;/////////////////////////////////////////////////////////////////
Dec dx
Mov al,0f5h           ;CRF5 (PLED mode register)
Out dx,al
Inc dx
In al,dx
And al,not 08h       ;Set second as counting unit
Out dx,al
;/////////////////////////////////////////////////////////////////
Dec dx
Mov al,0f6h           ; CRF6
Out dx,al
Inc dx
Mov al,10             ;Set timeout interval as 10 sec.
Out dx,al
;/////////////////////////////////////////////////////////////////
Dec dx                 ;Exit W83627DHG config mode
Mov al,0aah           (out 0aah to 2eh once)
Out dx,al
;/////////////////////////////////////////////////////////////////

```

Appendix


**B**

**I/O Information**

## B.1 I/O Address Map

Address Range	Device Name
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 00000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000060 - 00000060]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006D]	Motherboard resources
[00000070 - 00000071]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000083]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000087 - 00000087]	Direct memory access controller
[00000088 - 00000088]	Motherboard resources
[00000089 - 0000008B]	Direct memory access controller
[0000008C - 0000008E]	Motherboard resources
[0000008F - 0000008F]	Direct memory access controller
[00000090 - 0000009F]	Motherboard resources
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000170 - 00000177]	Secondary IDE Channel
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000295 - 000002A4]	Motherboard resources
[000002F8 - 000002FF]	Communications Port (COM2)
[00000376 - 00000376]	Secondary IDE Channel
[00000378 - 0000037F]	Printer Port (LPT1)
[000003B0 - 000003B8]	Intel(R) Graphics Media Accelerator 3150
[000003C0 - 000003DF]	Intel(R) Graphics Media Accelerator 3150
[000003F6 - 000003F6]	Primary IDE Channel
[000003F8 - 000003FF]	Communications Port (COM1)
[00000480 - 000004BF]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[00000800 - 0000087F]	Motherboard resources
[00000A79 - 00000A79]	ISAPNP Read Data Port
[00000D00 - 0000FFFF]	PCI bus
[0000E000 - 0000E0FF]	Realtek PCIe FE Family Controller
[0000E000 - 0000EFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[0000F000 - 0000F01F]	Intel(R) ICH8 Family SMBus Controller - 283E
[0000F020 - 0000F03F]	Intel(R) ICH8 Family USB Universal Host Controller - 2831
[0000F040 - 0000F05F]	Intel(R) ICH8 Family USB Universal Host Controller - 2830
[0000F060 - 0000F06F]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
[0000F070 - 0000F07F]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
[0000F080 - 0000F083]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
[0000F090 - 0000F097]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
[0000F0A0 - 0000F0A3]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
[0000F0B0 - 0000F0B7]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
[0000F0C0 - 0000F0CF]	Intel(R) ICH8M Ultra ATA Storage Controllers - 2850
[0000F110 - 0000F117]	Intel(R) Graphics Media Accelerator 3150

## B.2 1<sup>st</sup> MB Memory Address Map

 Memory

[000A0000 - 000BFFFF]	Intel(R) Graphics Media Accelerator 3150
[000A0000 - 000BFFFF]	PCI bus
[3F700000 - FFFFFFFF]	PCI bus
[D0000000 - DFFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[E0000000 - E000FFFF]	Realtek PCIe FE Family Controller
[E0000000 - E000FFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[F0000000 - F3FFFFFF]	System board
[FE800000 - FE8FFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[FE900000 - FE9FFFFFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[FE920000 - FE920FFF]	Realtek PCIe FE Family Controller
[FEA00000 - FEA7FFFF]	Intel(R) Graphics Media Accelerator 3150
[FEA80000 - FEAFFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[FEB00000 - FEB03FFF]	Microsoft UAA Bus Driver for High Definition Audio
[FEB04000 - FEB040FF]	Intel(R) ICH8 Family SMBus Controller - 283E
[FEB05000 - FEB053FF]	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
[FEC00000 - FEC00FFF]	Motherboard resources
[FED14000 - FED19FFF]	System board
[FED1C000 - FED1FFFF]	Motherboard resources
[FED20000 - FED8FFFF]	Motherboard resources
[FEE00000 - FEE00FFF]	Motherboard resources
[FFE00000 - FFFFFFFF]	Motherboard resources




## B.3 IRQ Mapping Chart

 Interrupt request (IRQ)

(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 12	Microsoft PS/2 Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 7	Intel(R) ICH8 Family SMBus Controller - 283E
(PCI) 16	Intel(R) Graphics Media Accelerator 3150
(PCI) 16	Realtek PCIe FE Family Controller
(PCI) 18	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
(PCI) 19	Intel(R) ICH8 Family USB Universal Host Controller - 2831
(PCI) 21	Microsoft UAA Bus Driver for High Definition Audio
(PCI) 22	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
(PCI) 23	Intel(R) ICH8 Family USB Universal Host Controller - 2830
(PCI) 23	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836

## B.4 DMA Channel Assignments

---

-   Direct memory access (DMA)
-  4 Direct memory access controller



Appendix

C

# AHCI Setting

## C.1 Setting AHCI

OS installation to SETUP AHCI Mode

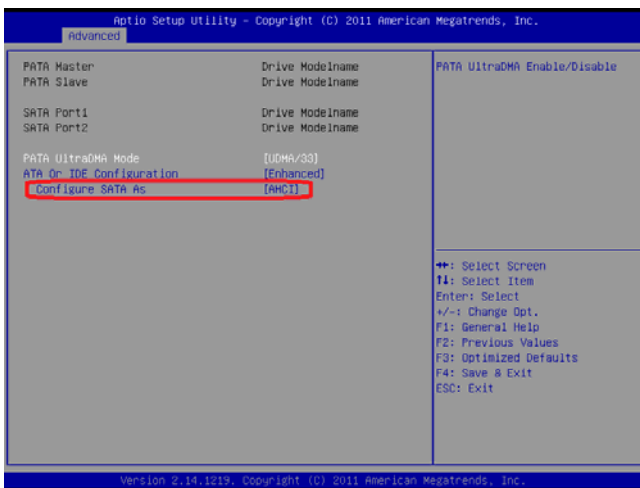
Step 1: Copy below files from “Driver CD -> STEP5 -

AHCI\WinXP\_32” or “Driver CD -> STEP5 - AHCI\WinXP\_64” to diskette.

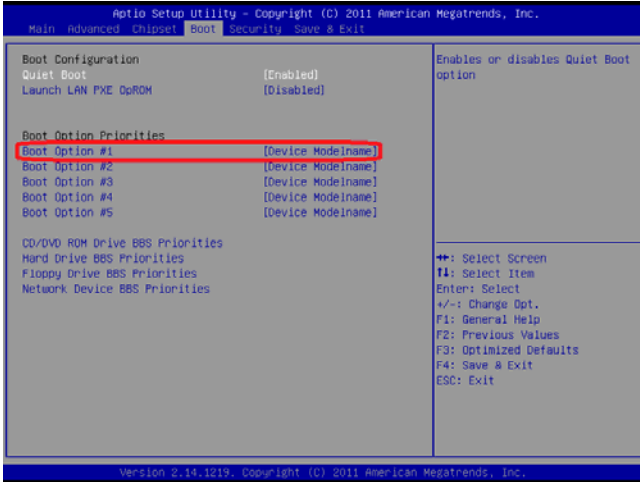


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

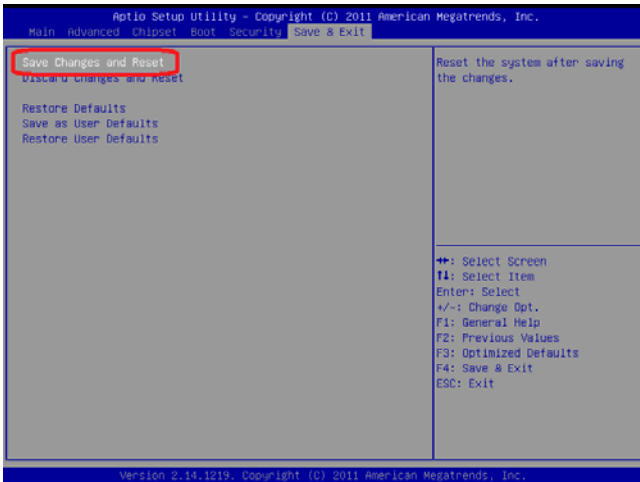
Step 3: Configure SATA Controller to AHCI mode in **BIOS SETUP Menu: Advanced -> IDE Configuration -> Configure SATA As -> AHCI Mode**



Step 4: Configure DVD/CD-ROM drive as the first boot device.

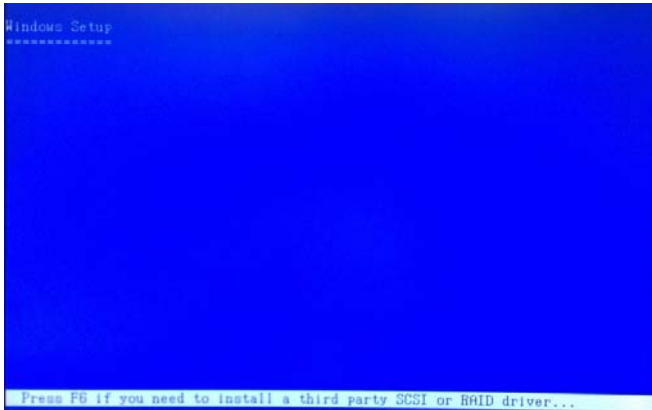


Step 5: Save changes and exit BIOS SETUP



Step 6 – Boot to DVD/CD-ROM device to install OS

Step 7 – Press “**F6**” to install AHCI driver



Step 8 – Press “**S**” to install AHCI driver



Step 9 – Choose “**Intel(R) ICH8M-E/M SATA AHCI Controller**”

Step 10 – Windows Setup will display the controller name you selected in previous step and continue to install OS when “**ENTER**” pressed.