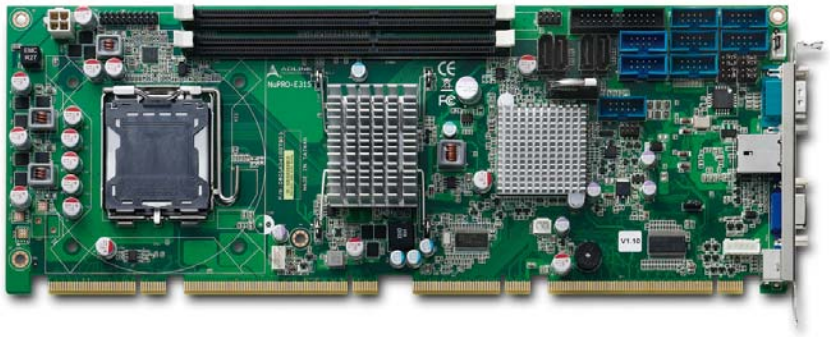
NuPRO-E315

Full-Sized PICMG 1.3 SHB
Intel® G41/ICH7R Chipset

User's Manual



Manual Rev.: 2.00

Revision Date: March 21, 2012

Part No: 50-13070-1000

Recycled Paper

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Advance Technologies; Automate the World.

Revision History

Revision	Release Date	Description of Change(s)
2.00	2012/03/21	Initial Release

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Preface

Copyright 2012 ADLINK Technology Inc.

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

Disclaimer

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

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

Environmental Responsibility

ADLINK is committed to fulfill its social responsibility to global environmental preservation through compliance with the European Union's Restriction of Hazardous Substances (RoHS) directive and Waste Electrical and Electronic Equipment (WEEE) directive. Environmental protection is a top priority for ADLINK. We have enforced measures to ensure that our products, manufacturing processes, components, and raw materials have as little impact on the environment as possible. When products are at their end of life, our customers are encouraged to dispose of them in accordance with the product disposal and/or recovery programs prescribed by their nation or company.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Using this Manual

Audience and Scope

The NuPRO-E315 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating industrial grade single board computers.

Manual Organization

This manual is organized as follows:

Preface: Presents important copyright notifications, disclaimers, trademarks, and associated information on the proper understanding and usage of this document and its associated product(s).

Chapter 1, Introduction: Introduces the NuPRO-E315, its features, applications, and specifications, including functional descriptions and board layout.

Chapter 2, Hardware Information: Provides technical information on connectors and jumpers for configuring the NuPRO-E315.

Chapter 3, Getting Started: Illustrates how to install components on the NuPRO-E315 such as CPU, heatsink, and memory modules.

Chapter 4, Driver Installation: Provides information on how to install the NuPRO-E315 device drivers.

Chapter 5, BIOS Setup: Describes basic navigation for the AMIBIOS®8 BIOS setup utility.

Appendix A, Watchdog Timer: Presents information on implementing the watchdog timer.

Appendix B, System Resources: Presents information on I/O mapping, IRQ routing, and resource allocation.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Getting Service: Contact information for ADLINK's worldwide offices.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.


NOTE:

Additional information, aids, and tips that help users perform tasks.


CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.


WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Table of Contents

Revision History ii

Preface iii

List of Figures xi

List of Tables xiii

1 Introduction 1

1.1 Overview 1
1.2 Features 1
1.3 Specifications 2
1.4 Power Consumption 4
1.5 Block Diagram 9
1.6 Functional Description 10
1.7 Mechanical Drawing 12
1.8 I/O Connectivity 13
1.9 Package Contents 14

2 Hardware Information 15

2.1 Rear Panel I/O Ports 15
2.2 Board Layout 18
2.3 Onboard Connectors 19
2.4 Jumpers 24

3 Getting Started 27

3.1 Installing the CPU 27
3.2 Installing the CPU Fan and Heatsink 31
3.3 Installing Memory Modules 34

4 Driver Installation 37

4.1 Intel® Rapid Storage Technology Driver 37

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4.2 Intel® G41 Express Chipset Driver 37
4.3 Display Driver 38
4.4 LAN Driver 38
4.5 Audio Driver 38

5 BIOS Setup 39
5.1 Starting the BIOS 39
5.2 Main Setup 43
5.3 Advanced BIOS Setup 44
5.3.1 CPU Configuration 45
5.3.2 IDE Configuration 47
5.3.3 Super IO Configuration 49
5.3.4 Hardware Health Configuration 51
5.3.5 Remote Access Configuration 52
5.3.6 APM Configuration 54
5.4 PCI/PnP Settings 56
5.5 Boot Settings 58
5.5.1 Boot Settings Configuration 58
5.5.2 Boot Device Priority 59
5.6 Security Setup 60
5.7 Chipset Setup 61
5.7.1 North Bridge Configuration 62
5.7.2 South Bridge Configuration 64
5.8 Exit Menu 66

A Appendix: Watchdog Timer 69
A.1 Sample Code 69

B Appendix: System Resources 71
B.1 System Memory Map 71
B.2 Direct Memory Access Channels 71
B.3 IO Map 72
B.4 Interrupt Request (IRQ) Lines - APIC Mode 74

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

B.5 PCI Configuration Space Map 75
B.6 PCI/PCIe Interrupt Routing Map 76

Important Safety Instructions 77

Getting Service 79

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

List of Figures

Figure 1-1: NuPRO-E315 Block Diagram 9
Figure 1-2: NuPRO-E315 Board Dimensions 12
Figure 2-1: Rear Panel I/O Ports..... 15
Figure 2-2: Connectors and Jumpers..... 18

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

List of Tables

Table 1-1: NuPRO-E315 General Specifications 2
Table B-1: System Memory Map 71
Table B-2: Direct Memory Access Channels 71
Table B-3: IO Map 73
Table B-4: IRQ Lines APIC Mode 74
Table B-5: PCI Configuration Space Map 75
Table B-6: PCI/PCIe Interrupt Routing Map 76

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1 Introduction

1.1 Overview

The ADLINK NuPRO-E315 is a PICMG 1.3 System Host Board (SHB) supporting the next-generation Intel® Core™2 Quad/Duo, Pentium® Dual-Core and Celeron® processors in the LGA775 package to deliver a high performance platform for a wide array of industrial automation applications. The NuPRO-E315 supports 45nm process CPUs at up to 3.00GHz and 1333 MHz Front Side Bus (FSB). Dual channel DDR3 800/1066 MHz memory is supported up to a maximum of 4GB in two DIMM slots.

These advanced features, coupled with PCI Express® x16 expansion capability, PCI Express®-based Gigabit Ethernet and diverse I/O and storage make the NuPRO-E315 ideal for instrumentation and automation control applications.

1.2 Features

- Supports Intel® Core™2 Quad/Duo, Pentium® Dual-Core and Celeron® processors in LGA775 package
- PCI Express® x16 expansion capability via backplane
- 10/100/1000Mbps Ethernet
- 8x USB 2.0 ports (4x onboard, 4x on backplane)
- 4x SATA 3 Gb/s ports onboard
- Watchdog Timer, Hardware Monitor
- Optional HD audio kit (DB-Audio2 daughter board)
- RoHS compliant



To purchase the optional DB-Audio2 daughter board, please contact your ADLINK sales representative.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.3 Specifications

System	
CPU/Cache	• Intel® Core™2 Quad/Duo, Pentium® Dual-Core, Celeron® in LGA775 Socket
FSB	• 800/1066/1333 MHz
Chipset	• Intel® 82G41 Graphics Memory Controller Hub • Intel® ICH7R I/O Controller Hub
Memory	• Two 240-pin DIMM sockets support 800/1066MHz DDR3 (up to 4GB)
BIOS	• AMI BIOS in 32-Mbit SPI Flash
Audio	• Intel® High Definition Audio support via DB-Audio2 daughter board
Watch Dog Timer	• 1-255 second or 1-255 minute programmable and can generate system reset.
Hardware Monitor	• CPU/System temperature, fan speed and onboard DC voltages
Operating Systems	• Windows XP, 7 32/64-bit • Fedora 12, Red Hat Enterprise Linux 5
I/O Interfaces	
Serial ATA	• Four SATA ports, data rate up to 3 Gb/s
I/O Ports	• 8 USB 2.0 port (4 by onboard header, 4 via backplane • 6 Serial ports (one RS-232/422/485/485+ on faceplate (DB-9), 5 RS-232 via onboard pin-header) • 1 Gigabit Ethernet RJ-45 port • 1 VGA port (DB-15) • PS/2 Keyboard/Mouse (Mini-DIN 6-pin) • 1 Parallel port
PCIe/PCI	• PCIe-x16, PCIe-x4 and PCI 32bit/33MHz via golden fingers
Display	
Processor	• GMA X4500 integrated in G41 GMCH
Graphics	• VGA by DB-15 connector on rear panel, resolution up to 2048 x 1536 @ 75 Hz

Table 1-1: NuPRO-E315 General Specifications

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Ethernet	
Controller	• Intel® 82574L • Supports Preboot Execution Environment (PXE), Wake-On-LAN
Ports	• One RJ-45 Ethernet port
Mechanical and Environment	
Form Factor	• Standard full-size PICMG 1.3 SHB
Dimensions	• 338 x 126 mm (L x W)
Operating Temp.	• 0ºC to 60ºC
Storage Temp.	• -20ºC to 80ºC
Relative Humidity	• 10% to 90% non-condensing both operating and non-operating
Safety	• CE, FCC Class A

Table 1-1: NuPRO-E315 General Specifications

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.4 Power Consumption

Intel® Core™2 Quad Processor Q9400

Test Configuration	
CPU	Intel® Core™2 Quad Processor Q9400, 6M Cache, 2.66 GHz, 1333 MHz FSB
Memory	2x Apacer 78.A1GC6.421 2GB DDR3 1333 (ELPIDA J1108BDBG-DJ-F)
Graphics	Intel ® 82G41 Graphics Memory Controller
SATA Channel 1	Seagate ST9160412AS Barracuda 7200.4 160GB
Power Supply	FSP FSP460-60PFG

DOS Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.31	0.92	3.48	—
Watts (W)	1.54	3.03	41.75	46.32
Windows Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.31	0.92	2.79	—
Watts (W)	1.53	3.04	33.52	38.08
Windows XP, 100% CPU Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.30	0.91	5.89	—
Watts (W)	1.49	3.00	70.68	75.17
Windows XP, Total System Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.31	0.92	5.93	—
Watts (W)	1.55	3.02	71.14	75.70

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Intel® Core™2 Duo Processor E8400

Test Configuration	
CPU	Intel® Core™2 Duo Processor E8400, 6M Cache, 3.00 GHz, 1333 MHz FSB
Memory	2x Apacer 78.A1GC6.421 2GB DDR3 1333 (ELPIDA J1108BDBG-DJ-F)
Graphics	Intel ® 82G41 Graphics Memory Controller
SATA Channel 1	Seagate ST9160412AS Barracuda 7200.4 160GB
Power Supply	FSP FSP460-60PFG

DOS Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.27	0.89	3.86	—
Watts (W)	1.35	2.94	46.28	50.57
Windows Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.29	0.90	3.41	—
Watts (W)	1.43	2.97	40.86	45.26
Windows XP, 100% CPU Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.27	0.89	4.94	—
Watts (W)	1.35	2.94	59.30	63.59
Windows XP, Total System Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.29	0.89	5.08	—
Watts (W)	1.46	2.94	60.90	65.30

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Intel® Core™2 Duo Processor E7400

Test Configuration	
CPU	Intel® Core™2 Duo Processor E7400, 3M Cache, 2.80 GHz, 1066 MHz FSB
Memory	2x Apacer 78.A1GC6.421 2GB DDR3 1333 (ELPIDA J1108BDBG-DJ-F)
Graphics	Intel ® 82G41 Graphics Memory Controller
SATA Channel 1	Seagate ST9160412AS Barracuda 7200.4 160GB
Power Supply	FSP FSP460-60PFG

DOS Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.23	0.89	2.98	—
Watts (W)	1.14	2.94	35.76	39.84
Windows Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.25	0.90	2.61	—
Watts (W)	1.23	2.98	31.37	35.58
Windows XP, 100% CPU Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.32	0.89	4.06	—
Watts (W)	1.58	2.94	48.73	53.25
Windows XP, Total System Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.25	0.90	4.21	—
Watts (W)	1.23	2.97	50.54	54.75

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Intel® Core™2 Duo Processor E6400

Test Configuration	
CPU	Intel® Core™2 Duo Processor E6400, 2M Cache, 2.13 GHz, 1066 MHz FSB
Memory	2x Apacer 78.A1GC6.421 2GB DDR3 1333 (ELPIDA J1108BDBG-DJ-F)
Graphics	Intel ® 82G41 Graphics Memory Controller
SATA Channel 1	Seagate ST9160412AS Barracuda 7200.4 160GB
Power Supply	FSP FSP460-60PFG

DOS Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.21	0.89	3.22	—
Watts (W)	1.07	2.92	38.63	42.62
Windows Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.22	0.89	2.72	—
Watts (W)	1.11	2.94	32.58	36.63
Windows XP, 100% CPU Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.22	0.87	4.14	—
Watts (W)	1.08	2.88	49.65	53.60
Windows XP, Total System Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.25	0.88	4.24	—
Watts (W)	1.26	2.91	50.90	55.07

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Intel® Pentium® Processor E5300

Test Configuration	
CPU	Intel® Pentium® Processor E5300, 2M Cache, 2.60 GHz, 800 MHz FSB
Memory	2x Apacer 78.A1GC6.421 2GB DDR3 1333 (ELPIDA J1108BDBG-DJ-F)
Graphics	Intel ® 82G41 Graphics Memory Controller
SATA Channel 1	Seagate ST9160412AS Barracuda 7200.4 160GB
Power Supply	FSP FSP460-60PFG

DOS Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.23	0.90	2.75	—
Watts (W)	1.15	2.96	32.99	37.10
Windows Idle				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.23	0.89	2.49	—
Watts (W)	1.16	2.94	29.89	33.99
Windows XP, 100% CPU Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.23	0.89	3.79	—
Watts (W)	1.15	2.94	45.44	49.53
Windows XP, Total System Stress (BurnInTest)				
Power Req.	+5V	+3.3V	+12V	Total
Current (A)	0.23	0.89	3.88	—
Watts (W)	1.15	2.94	46.51	50.60

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.5 Block Diagram

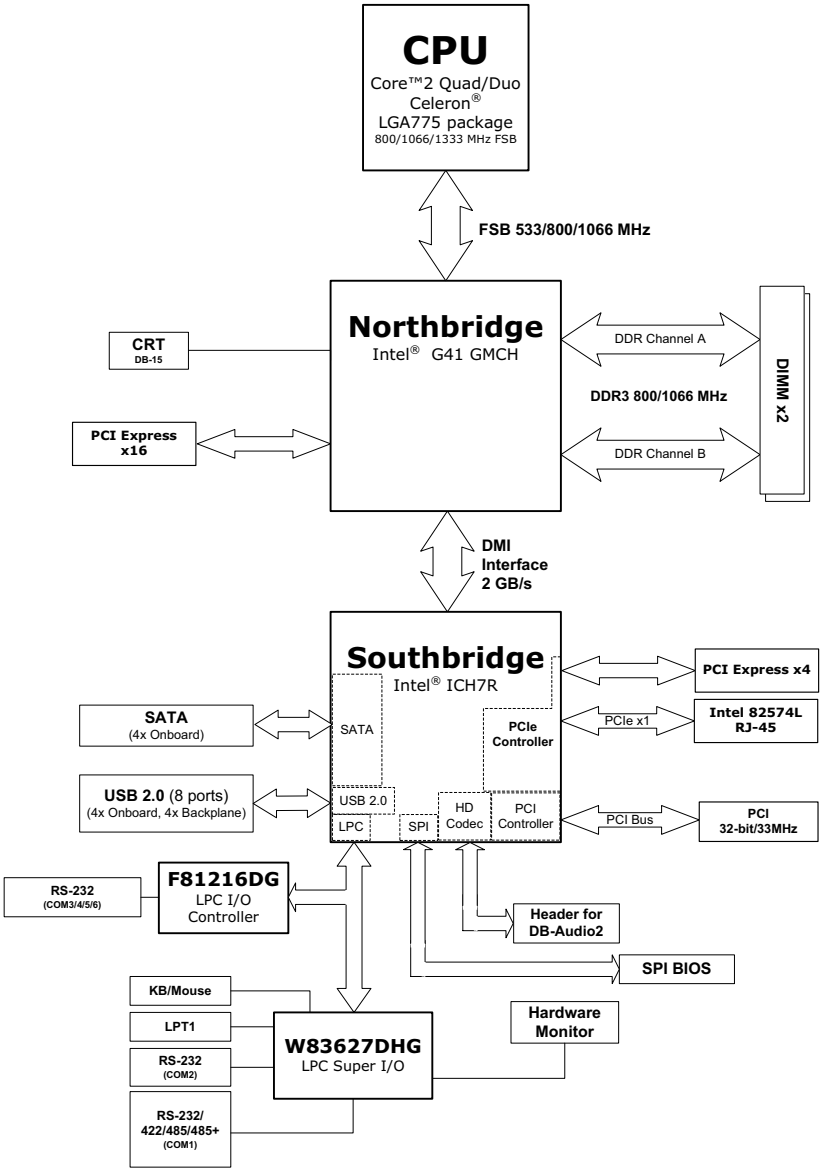


Figure 1-1: NuPRO-E315 Block Diagram

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.6 Functional Description

Processor Support

The NuPRO-E315 is designed for a single processor from the Intel Yorkfield/Wolfdale/Conroe processor family, starting from 2.0 GHz core frequency up to 3.0 GHz. With one LGA775 socket, the CPU connects with the Intel® G41 GMCH through the 800/1066/1333 MHz Front Side Bus (FSB).

Intel® G41 + ICH7R Express chipset

The Intel® G41 Express chipset provides the vital interfaces for the SHB. The Intel® G41 comes with purpose-built capabilities designed specifically to address the key needs of the industrial computing environment and delivers improved system performance and comes with the integrated Intel® Graphics Media Accelerator X4500 engine for cost-effective system building. The chipset also supports high-bandwidth interfaces including PCI Express, Serial ATA, and USB 2.0, as well as dual-channel DDR3 system memory.

Intel® Graphics Media Accelerator X4500

The Intel® Graphics Media Accelerator (GMA) X4500 revolutionizes integrated graphics with new capabilities that provide significant increase in graphics performance. With support for DirectX 10 hardware acceleration, Shader Model 4.0 and OpenGL 2.0, the Intel GMA X4500 delivers excellent video and 3D graphics for a cost-effective and high-performance graphics solution.

Dual-channel DDR3 memory

To meet the requirements of memory-intensive applications, the NuPRO-E315 has a dual-channel memory architecture supporting DDR3 800/1066 MHz DIMMs. The key advantages of DDR3 are the higher bandwidth and the increase in performance at lower power than DDR2. DDR3 memory technology meets the requirements of the latest 3D graphics, multimedia, and network application, and boosts system performance by eliminating bottlenecks.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Gigabit Ethernet

The NuPRO-E315 uses an Intel® 82574L Gigabit Ethernet controller connected to the PCI-E x1 bus of the ICH7R. Operation at data rates of 10/100/1000 Mbps, Wake-on-LAN and PXE are supported.

Serial ATA

Storage is efficient and secure with the Serial ATA interface. Utilizing the Intel® ICH7R, the NuPRO-E315 supports up to four Serial ATA devices capable of reading/writing data at up to 3 Gbps. The SATA specification improves chassis airflow via thinner and more flexible cables with lower pin count. Intel® Matrix Storage Technology is supported for RAID 0/1/5/10 capabilities.

Universal Serial Bus (USB) 2.0

The NuPRO-E315 incorporates the Universal Serial Bus (USB) 2.0 specification that increases peripheral connection speed from 12 Mbps (USB 1.1) to 480 Mbps. USB 2.0 is backward compatible with USB 1.1.

Hardware monitoring

A built-in proactive hardware monitoring system monitors the CPU temperature, system fan rotations, and voltage levels to prevent overheating and/or component damage, effect timely failure detection, and ensure stable supply of current for critical components.

Watchdog Timer

The watchdog timer (WDT) monitors system operations based on user-defined configurations. The WDT can be programmed for different time-out periods, such as from 1 to 255 seconds or from 1 to 255 minutes. The WDT generates a reset signal, then a reset request, after failure to strobe it within the programmed time period. A register bit may be enabled to indicate if the watchdog timer caused the reset event. The WDT register is cleared during the power-on sequence to enable the operating system to take appropriate action when the watchdog generates a reboot.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.7 Mechanical Drawing

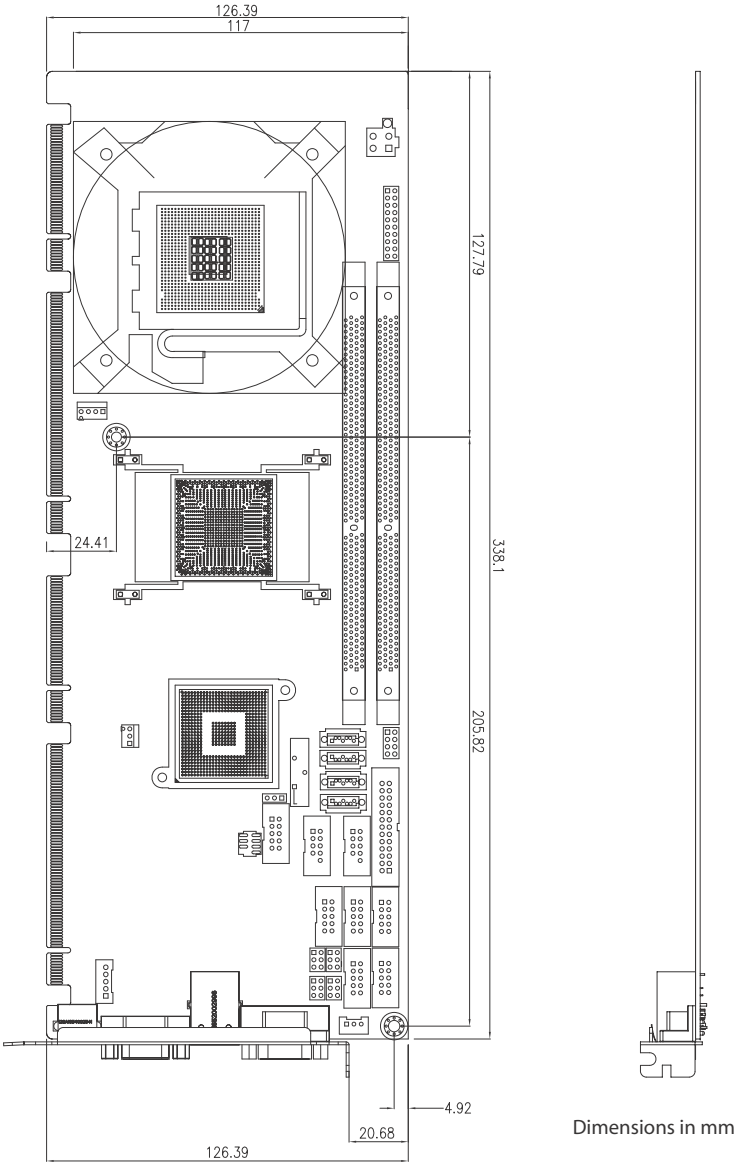


Figure 1-2: NuPRO-E315 Board Dimensions

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.8 I/O Connectivity

I/O	Bracket	Onboard	Golden Finger	Remarks
VGA	Y	—	—	DB-15
GbE (RJ-45)	Y	—	—	Act/Link/Speed LEDs
PS/2 KB/MS	Y	—	—	—
KB header	—	Y	—	—
USB headers	—	4	—	2.54 pitch
USB backplane	—	—	4	—
COM1	Y	Y	—	DB-9
COM2/3/4/5/6	—	Y	—	2.54 pitch
Parallel port	—	Y	—	—
SATA	—	4	—	—
PCIe x4	—	—	Y	—
PCIe x16	—	—	Y	—
PCI 32bit/33MHz	—	—	Y	—

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.9 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from the dealer before returning any product to ADLINK.

- NuPRO-E315
- 2-port USB cable with bracket x1
- 2-port COM cable with bracket x1
- SATA data cable with latch x2
- 4-pin Molex to SATA power cable adapter x1
- PS/2 Y cable
- NuPRO-E315 Driver CD
- Quick Installation Guide



The NuPRO-E315 must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the board. Wear a grounded wrist strap when installing and/or servicing.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2 Hardware Information

This chapter provides information on the NuPRO-E315 board lay-out, connector pin assignments, and jumper settings.

2.1 Rear Panel I/O Ports

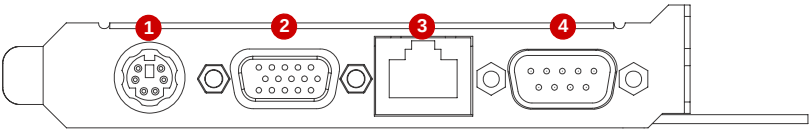
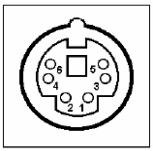


Figure 2-1: Rear Panel I/O Ports

	Connector	Description
1	PS/2 KB/MS port	Connects PS/2 mouse and keyboard via Y cable
2	VGA port	DB-15 connector for CRT or LCD monitor
3	Gigabit LAN2 port	RJ-45 connector for Gigabit Ethernet connection
4	COM1	DB-9 connector for COM1 port

PS/2 Keyboard/Mouse Port

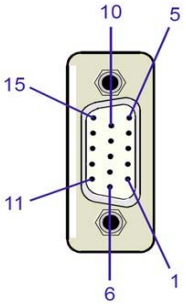


Pin #	Signal	Function
1	KBDAT	Keyboard Data
2	MSDAT	Mouse Data
3	GND	Ground
4	KBMS5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

VGA Port

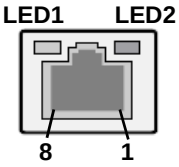
(DB-15)



Pin #	Signal	Pin #	Signal
1	Red	9	+5 V
2	Green	10	Ground
3	Blue	11	NC
4	NC	12	DDC DAT
5	Ground	13	HSYNC
6	Ground	14	VSYNC
7	Ground	15	DDC CLK
8	Ground		

LAN Port

(RJ-45)



Pin #	10BASE-T/ 100BASE-TX	1000BASE-T
1	TX+	BI_DA+
2	TX-	BI_DA-
3	RX+	BI_DB+
4	--	BI_DC+
5	--	BI_DC-
6	RX-	BI_DB-
7	--	BI_DD+
8	--	BI_DD-

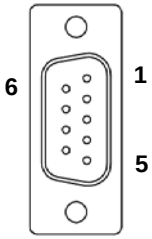
Refer to the table below for the LAN port LED definitions.

LED1		LED2	
Status	**Description**	**Status**	**Description**
Off	No Link	Off	10 Mb connection
On	Linked	Green	100 Mb connection
Blinking	Data Activity	Amber	1 Gb connection

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

COM1 Connector

(DB-9)



Pin #	RS-232	RS422/485+	RS485
1	DCD	TXD-	Data-
2	RXD	TXD+	Data+
3	TXD	RXD+	--
4	DTR	RXD	--
5	GND	GND	GND
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

Note: See “COM1 Mode Jumper Settings (JP1-4)” on page 24.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.2 Board Layout

The illustrations below show the locations of connectors, slots, and jumpers on the NuPRO-E315.

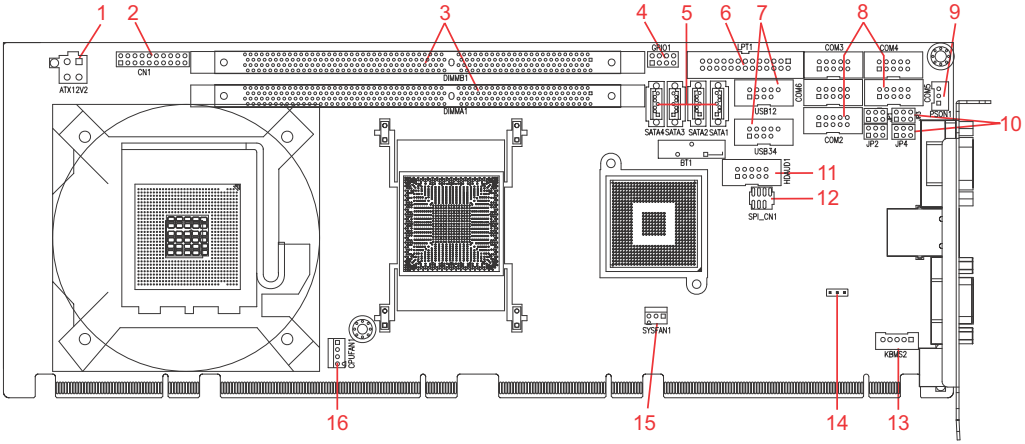


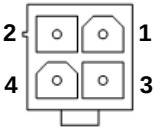
Figure 2-2: Connectors and Jumpers

	Connector	Description
1	ATX12V2	ATX 12V Power connector
2	CN1	System Panel pin header
3	DIMMA1/B1	DDR3 DIMM slots
4	GPIO1	GPIO pin header
5	SATA1-4	SATA connectors
6	LPT1	Parallel Port connector
7	USB12-34	USB connectors
8	COM2-6	COM2-6 connectors
9	PSON1	AT/ATX mode select jumper
10	JP1-4	COM1 mode jumpers
11	HDAUD1	Audio connector
12	SPI_CN1	SPI pin header
13	KBMS2	Keyboard connector
14	CMOS1	Clear CMOS jumper
15	SYSFAN1	System Fan connector
16	CPUFAN1	CPU Fan connector

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.3 Onboard Connectors

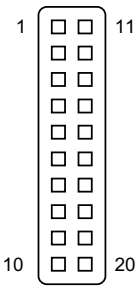
ATX 12V Power Connector (ATX12V2)



Pin #	Signal
1	GND
2	GND
3	+12V DC
4	+12V DC

System Panel Connector (CN1)

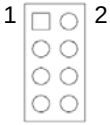
Connects to chassis-mounted s, speakers, and LEDs.



Pin #	Signal	Function	Pin Group
1	WDSPK	Speaker signal	Chassis Speaker
2	NC		
3	NC		
4	+5V	Power	
5	NC		
6	GND	Ground	Key Lock
7	KEYLOCK	Keyboard lock	
8	PLED	Power LED signal	Power LED
9	NC		
10	+5V	Power LED pull-up	
11	GND	Ground	Reset
12	RESETBT	RESET signal	
13	NC		
14	GND	Ground	Power
15	POWERBT	Power-on signal	
16	NC		
17	NC		
18	HDDLED	Hard Disk LED signal	HDD LED
19	+3.3V	Hard Disk LED pull-up	
20	NC		

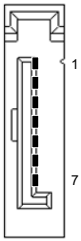
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

GPIO Pin Header (GPIO1)



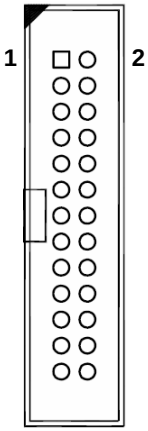
Pin #	Signal	Pin #	Signal
1	ICH_GPIO 10	2	3.3V
3	ICH_GPIO9	4	3.3V
5	ICH_GPIO15	6	3.3V
7	ICH_GPIO14	8	3.3V

Serial ATA Connectors (SATA1-4)



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

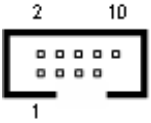
Parallel Port Connector (LPT1)



Pin #	Signal	Pin #	Signal
1	Line Printer Strobe	2	Auto-Feed
3	Parallel Data 0	4	Error
5	Parallel Data 1	6	Initialize
7	Parallel Data 2	8	Select
9	Parallel Data 3	10	Ground
11	Parallel Data 4	12	Ground
13	Parallel Data 5	14	Ground
15	Parallel Data 6	16	Ground
17	Parallel Data 7	18	Ground
19	Acknowledge	20	Ground
21	Busy	22	Ground
23	Paper Empty	24	Ground
25	Select	26	NC

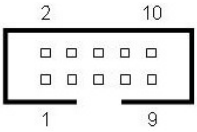
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

USB 2.0 Connectors (USB12-34)



Pin #	Signal	Pin #	Signal
1	+5V	2	+5V
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key	10	NC

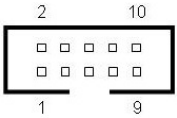
COM Connectors (RS-232) (COM2-6)



Pin #	RS-232 Signal
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND
10	NC

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

HD Audio Daughter Board Connector (HDAUD1)

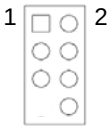


Pin #	Signal	Function
1	GND	Ground
2	AUD_BCLK	Audio Clock
3	GND	Ground
4	ICH_AUD_SDIN1	Audio Data Input
5	P5V	+ 5V
6	ICH_AUD_SDOUT	Audio Data Output
7	P5V_AUD	+ 5V
8	P3V3_DVDD	3.3V
9	AUD_SYNC	Audio Synchronous
10	AUD_RST-L	Audio Reset

NOTE:

This connector is designed for use with the ADLINK DB-Audio2 daughter board.

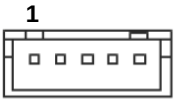
SPI Pin Header (SPI_CN1)



Pin #	Signal	Pin #	Signal
1	VCC3	2	Ground
3	SPI_CE#	4	SPICLK
5	SPI_SO_R	6	SPI_SI
7		8	NC

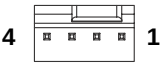
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

External Keyboard Connector (KBMS2)



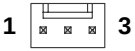
Pin #	Signal	Function
1	KBCLK	Keyboard clock
2	KBDATA	Keyboard data
3	NC	—
4	GND	Power
5	+5 V	Power

CPU Fan Connector (CPUFAN1)



Pin #	Signal
1	GND
2	Fan power (+12V)
3	Fan Sense
4	Fan Speed Control

System Fan Connector (SYSFAN1)

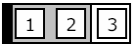
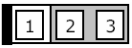


Pin #	Signal
1	Fan Sense
2	Fan power (+12V)
3	GND

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.4 Jumpers

AT/ATX Mode Jumper (PSON1)

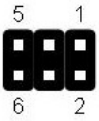
Mode	Jumper Setting	PSON1
AT	1 – 2	
ATX	2 – 3	

NOTE:

This jumper must be used to enable AT mode operation. Do NOT short the PSON signal of the ATX power connector on the backplane to ground. The NuPRO-E315 will not boot if this is done.

COM1 Mode Jumper Settings (JP1-4)

Short the jumper pins according to the following settings to set COM1 to RS-232/422/485/485+ mode:



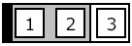
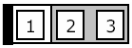
	RS-232	RS-422	RS-485	RS-485+
JP1	-	1-3, 2-4	1-3, 2-4	3-5, 4-6
JP2	1-2	3-4	5-6	5-6
JP3	1-3, 2-4	3-5, 4-6	3-5, 4-6	3-5, 4-6
JP4	1-3, 2-4	3-5, 4-6	3-5, 4-6	3-5, 4-6

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Clear CMOS (JBAT1)

The CMOS RAM data contains the date / time and BIOS setting information. CMOS is powered by the onboard cell battery. To erase the CMOS RAM data:

1. Power down and disconnect power from the system.
2. Short pins 2-3 on JP1.
3. Reconnect power and power up the system.
4. After power up, remove the jumper cap from pins 2-3 and reinstall it to pins 1-2.

RTC status	Connection	JBAT1
Normal	1 – 2	
Clear CMOS	2 – 3	

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3 Getting Started

This chapter provides information on how to install components on the NuPRO-E315 SHB.

3.1 Installing the CPU

The NuPRO-E315 supports a single Intel® Core™2 Quad/Duo, Pentium® D, or Celeron® M processor via the surface mount LGA775 socket (Socket T).

WARNING:

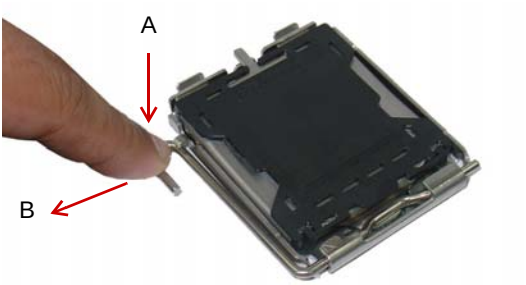
Disconnect all power supply to the board before installing a CPU to prevent damaging the board and CPU.

Do not touch socket contacts. Damaging the contacts voids the product warranty. Follow the installation instructions carefully to avoid damaging to motherboard components.



To install the CPU:

1. Press the load lever (A), then disengage it from the retention tab (B).



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2. Lift and rotate the load lever to a 135° angle



3. Lift the load plate to a 100° angle using your thumb and forefinger

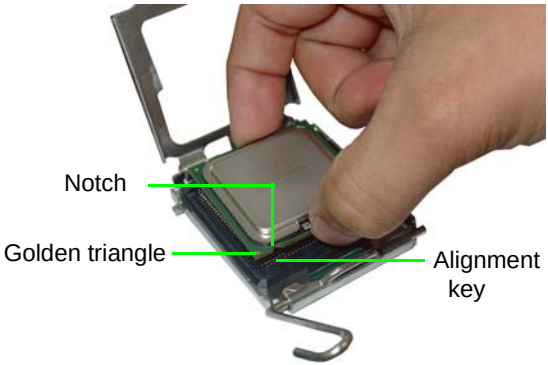


4. Use your thumb to push and remove the protective socket cover (plastic) from the load plate



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

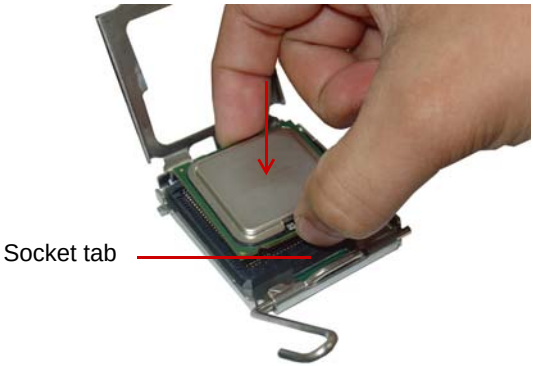
5. Position the CPU over the socket, then match the notches on the CPU side with the alignment keys on the socket. The golden triangle on the CPU must be positioned on the bottom-left corner of the socket .



WARNING:

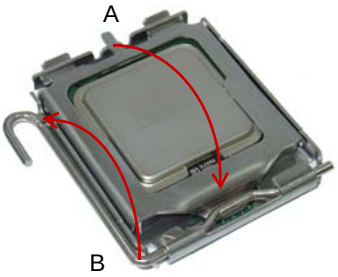
The CPU fits the socket in only one orientation. DO NOT force it into the socket to avoid damaging it.

6. Carefully place the CPU on the socket in a vertical motion. The socket has tabs that accommodate your fingers during installation .



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

7. Close the load plate (A), then fasten the load lever on the retention tab (B) .



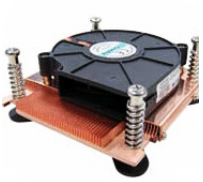
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.2 Installing the CPU Fan and Heatsink

CAUTION:

The CPU requires a chassis with an airflow inlet and maximum internal ambient temperature of 60° C. A especially-designed CPU fan and heatsink must be installed before using the SHB. Failure to install a CPU fan and heatsink may damage the system host board and/or the CPU.

The following CPU fan and heatsink assemblies are recommended for use with the NuPRO-E315:



1U LGA 775 CPU Cooler
Dimensions:
- Heatsink: 92 x 87.6 x 28 mm
- Fan: 75 x 75 x 15 mm

Heatsink: Copper base + copper skived fin
Fan speed: 5500 RPM
Fan airflow: 10.48 CFM
Noise level: 51 dBA
Part number: 32-20065-0000



3U LGA 775 CPU Cooler
Dimensions:
- Heatsink: 100 x 100 x 70 mm
- Fan: 90 x 90 x 25 mm

Heatsink: Aluminum extrusion
Fan speed: 4500 RPM
Fan airflow: 57.7 CFM
Noise level: 47.5 dBA
Part number: 32-20058-0000 + 34-30381-0000



Copper-Core Cooler
Dimensions: 115 x 115 x 61.4 mm
Heatsink: Aluminum extrusion+copper core
Fan speed: 4500 RPM
Fan airflow: 76.9 CFM
Noise level: 49 dBA
Part number: 32-20086-0000

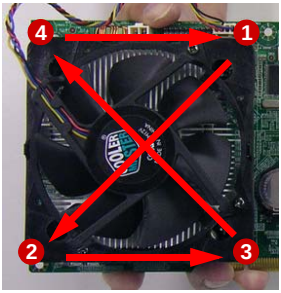
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

CPU Fan/Heatsink Installation

When the CPU fan/heatsink installation procedures presented here are inconsistent with the installation procedures included with the CPU fan and heatsink package, follow the latter.

To install the CPU fan/heatsink:

1. Attach the backplate included with the fan/heatsink to the bottom side of the SHB. If necessary, remove the paper strip(s) from the self-adhesive pads to secure the backplate to the SHB.
2. Remove the cover or plastic protector from the CPU-side of the heatsink if necessary. The heatsink may have a thermal interface material pre-applied. If not, a packet of thermal grease will be supplied with the heatsink. Apply thermal grease evenly on top of the installed CPU if required.
3. Carefully lower the CPU fan/heatsink onto the CPU and align the captive screws with the mounting holes of the backplate. Ensure the fan cable is on the side closest to the fan connector. Begin threading each screw into the backplate, then gradually tighten the screws in a criss-cross pattern until they are fully secured (see diagram below).



CAUTION:

Fully tightening a screw at one corner before beginning to tighten the other screws may cause uneven pressure to be applied to the CPU and damage the component and/or SHB.

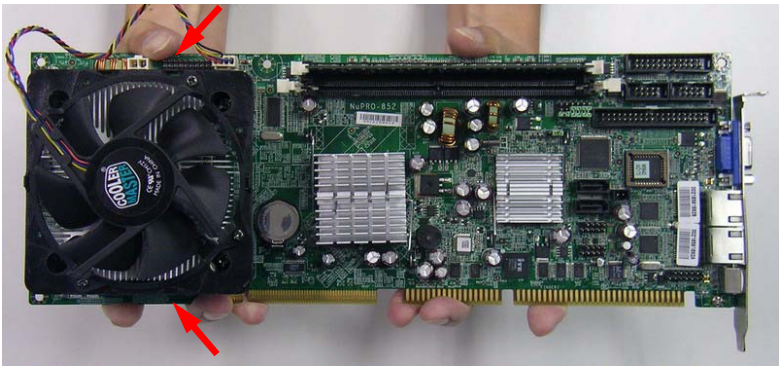
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4. Connect the CPU fan cable to the CPU fan connector on the SHB labeled FAN1 (see “Board Layout” on page 18).

Note: Do not use fan/heatsinks with *push-pin* type attachments. They may exert too much tension on the PCB and cause the board to flex, resulting in damage to the SHB.

Holding the SHB with Fan/Heatsink Installed

When the fan/heatsink is installed, always hold the SHB with two hands by the card edges. Make sure to support the weight of the fan/heatsink to prevent the board from bending, resulting in damage to circuitry and/or components.



CAUTION: Failure to properly support the weight of the fan/heatsink assembly when installed on the SHB may cause the board to flex and result in damage to circuitry and/or components.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3.3 Installing Memory Modules

The NuPRO-E315 supports up to 4 GB of DDR3 800/1066 MHz memory modules via four DDR3 DIMM sockets. A DDR3 module has a 240-pin footprint compared to the legacy 184-pin DDR DIMM. DDR3 modules are notched to facilitate correct installation on the DIMM sockets.

WARNING:

Disconnect all power supply to the board before installing a memory module to prevent damaging the board and memory module .

Memory Configuration Options

The NuPRO-E315 allows you to install 512 MB, 1GB and 2GB unbuffered non-ECC DDR3 DIMMs into the DIMM sockets following these configuration options:

- Channel A: DIMM1
  Channel B: DIMM2
- For dual-channel configuration, the total size of memory module installed per channel must be the same (DIMM1 = DIMM2).
- It is recommended that you install DIMMs with the same CAS latency. For maximum compatibility, install memory modules with the same brand, model, and/or rating.

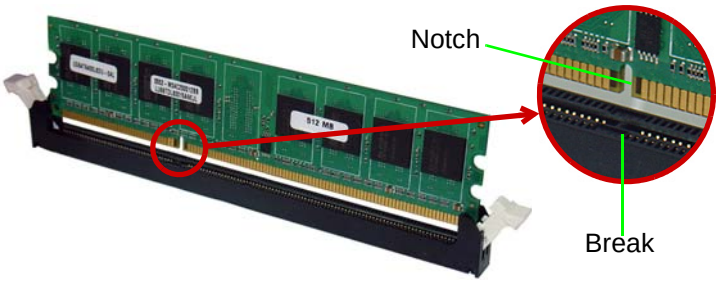
To install a memory module:

1. Locate the DIMM sockets on the motherboard.
2. Press the socket's retaining clips outward to unlock.

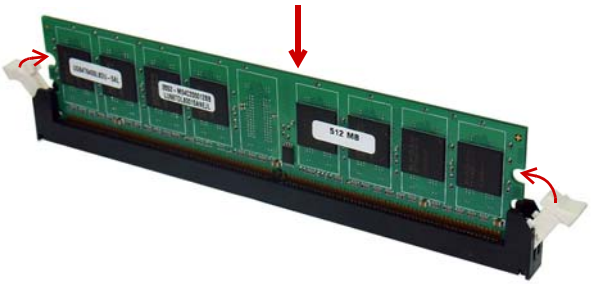


LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

3. Align the memory module on the socket making sure that the notch matches the break on the socket.



4. Insert the module firmly into the slot until the retaining clips snap back inwards and the module is securely seated.



This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4 Driver Installation

This chapter provides information on how to install the NuPRO-E315 device drivers under Windows XP. The device drivers are located in the following driver CD directories (or can be found on the ADLINK website (**www.adlinktech.com**):

Chipset Driver	\Driver\CHIP\
Display Driver	\Driver\VGA\
LAN Driver	\Driver\LAN\
RAID Driver	\Driver\RAID\
Audio Driver	\Driver\DB-Audio2\

4.1 Intel® Rapid Storage Technology Driver

In order to enable AHCI mode, you must install the Intel® Rapid Storage Technology driver during the Windows XP installation using the “F6 method” described below (not required for Windows 7).

1. Create a floppy image as described in the F6Readme.txt file contained in **X:\Driver\RAID\ Floppy Raid Driver For Win XP 32bits.zip**.
2. During Windows installation, press **F6** when you see the message, "*Press F6 if you need to install a third party SCSI or RAID driver.*", then press **S** to select "*Specify Additional Device*."
3. Insert the floppy disk and follow the remaining instructions. Leave the disk in until the system has rebooted and copied the necessary files, then remove the disk.

4.2 Intel® G41 Express Chipset Driver

This section describes the installation of the Intel® G41 Express chipset driver.

1. Locate the directory **X:\NuPRO\Driver\CHIP** on the driver CD, then extract and run the file **infinst_autol_9.2.0.1030.exe** in the following archive: **Chipset driver_Intel_INF_Update_Utility_All_WinOS.zip**.
2. Follow the screen instructions to complete installation, then restart the system if prompted.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4.3 Display Driver

This section describes the installation of the Intel® Graphics Media Accelerator (GMA) X4500 driver. To install the display driver:

1. Locate the display driver in the directory **X:\Driver\VGA**, then extract and run the file **winxp_14425.exe** from the following archive: **VGA_driver_Intel_ Integrated_Graphics_Windows XP_32bit.zip**.
2. Follow the screen instructions to complete installation, then restart the system if prompted.

4.4 LAN Driver

Follow these instructions to install the LAN driver.

1. Locate the LAN driver from the directory **X:\Driver\LAN**, then extract and run the file **PROWin32.exe** from the following archive: **Network_driver_Intel_ Network_Adapter for Windows XP 32-bit.zip**.
2. Follow the screen instructions to complete installation, then restart the system if prompted.

4.5 Audio Driver

Follow these instructions to install the audio driver for the optional DB-Audio2 daughter board.


NOTE:

Before installing the audio driver, check the BIOS settings to make sure that audio is enabled: **Chipset > South Bridge Configuration > Audio Controller** (see “South Bridge Configuration” on page 64).

1. Locate the audio driver in the directory **X:\Driver\DB-Audio2**, then double-click on the **setup.exe** file to start installation.
2. Follow the screen instructions to complete installation, then restart the system if prompted.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5 BIOS Setup

The following chapter describes basic navigation for the AMIBIOS®8 BIOS setup utility.

5.1 Starting the BIOS

To enter the setup screen, follow these steps:

1. Power on the motherboard
2. Press the < Delete > key on your keyboard when you see the following text prompt:
   < Press DEL to run Setup >
3. After you press the < Delete > key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.



Note: In most cases, the < Delete > key is used to invoke the setup screen. There are several cases that use other keys, such as < F1 >, < F2 >, and so on.

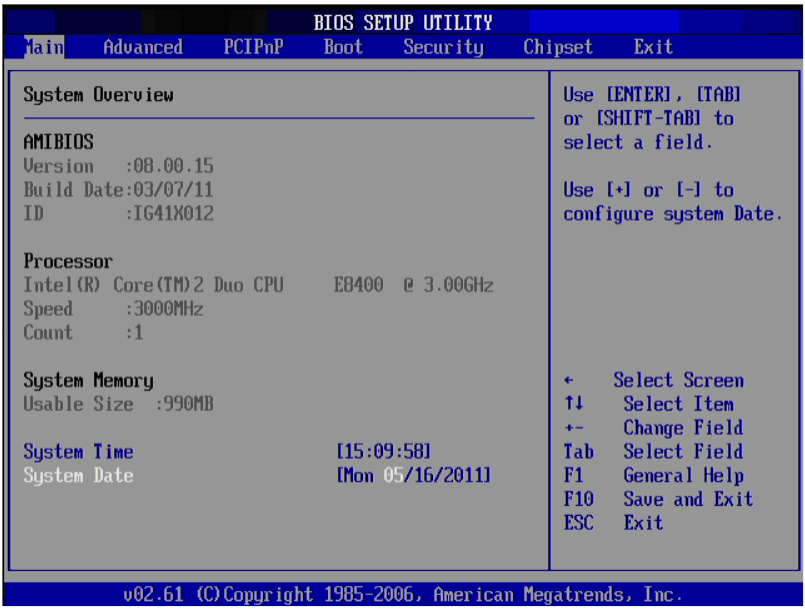
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Setup Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this user's guide.

The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed" options cannot be configured, "Blue" options can be.

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

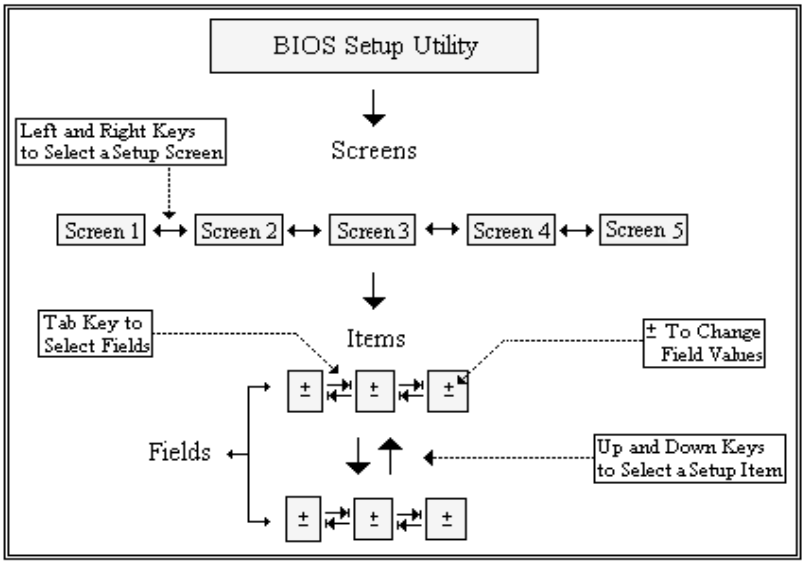


Navigation

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include < F1 >, < F10 >, < Enter >, < ESC >, < Arrow > keys, and so on. .

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000



Note: There is a hot key legend located in the right frame on most setup screens.

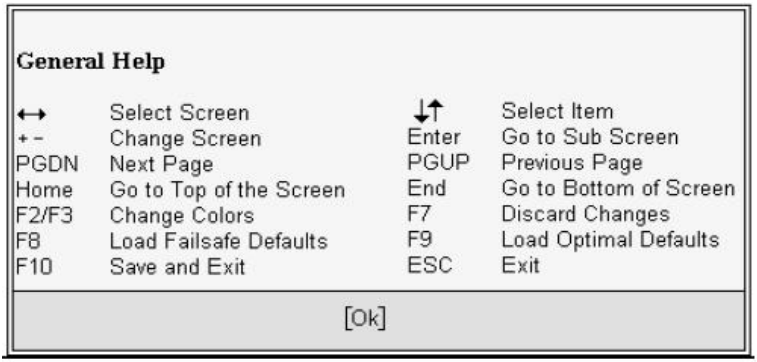
The < F8 > key on your keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the < F8 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The Fail-Safe settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

Hotkey Descriptions

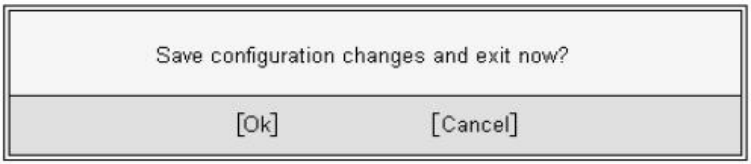
F1 The < F1 > key allows you to display the General Help screen.

Press the < F1 > key to open the General Help screen.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

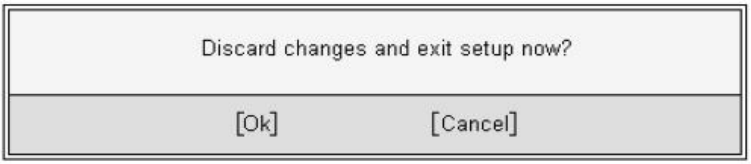


F10 The < F10 > key allows you to save any changes you have made and exit Setup. Press the < F10 > key to save your changes. The following screen will appear:



Press the < Enter > key to save the configuration and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

ESC The < Esc > key allows you to discard any changes you have made and exit the Setup. Press the < Esc > key to exit the setup without saving your changes. The following screen will appear:



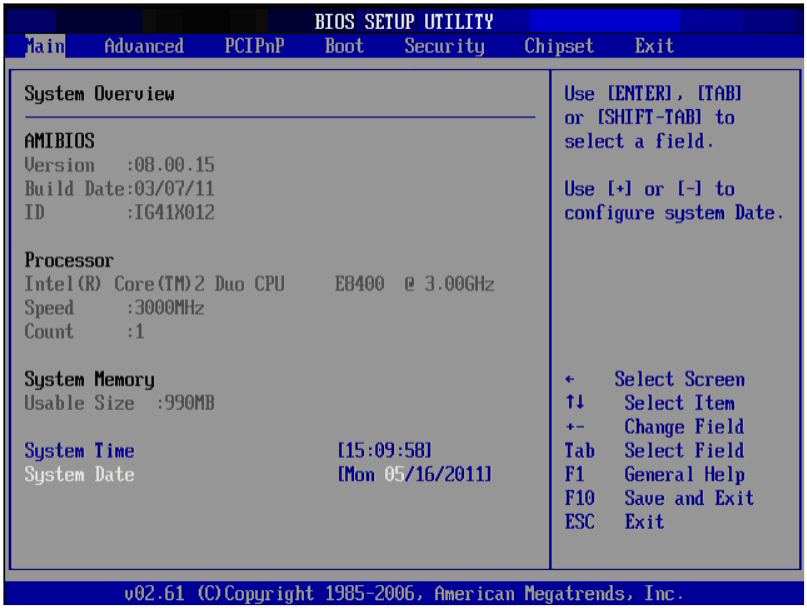
Press the < Enter > key to discard changes and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

Enter The < Enter > key allows you to display or change the setup option listed for a particular setup item. The < Enter > key can also allow you to display the setup sub-screens.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.2 Main Setup

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



System Time/System Date

Use this option to change the system time and date. Highlight System Time or System Date using the < Arrow > keys. Enter new values using the keyboard. Press the < Tab > key or the < Arrow > keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

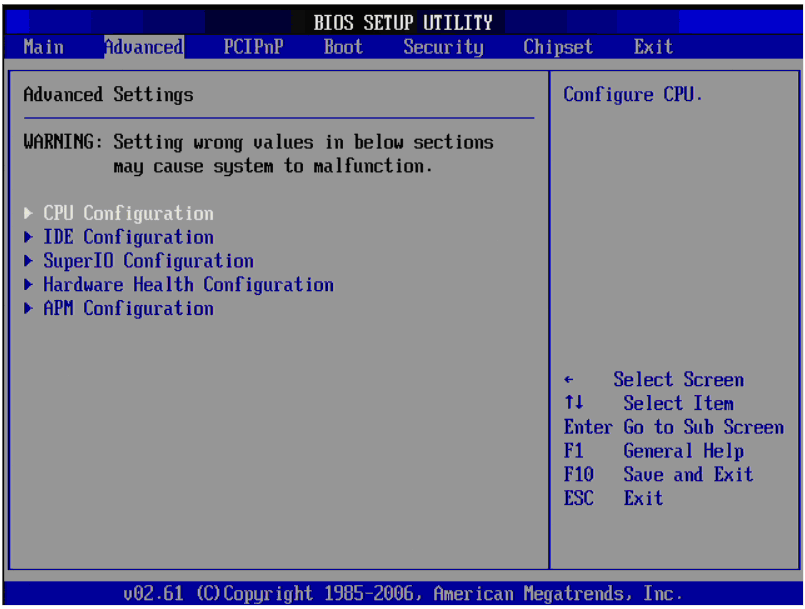
Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3 Advanced BIOS Setup

Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the < Arrow > keys. The Advanced BIOS Setup screen is shown below.

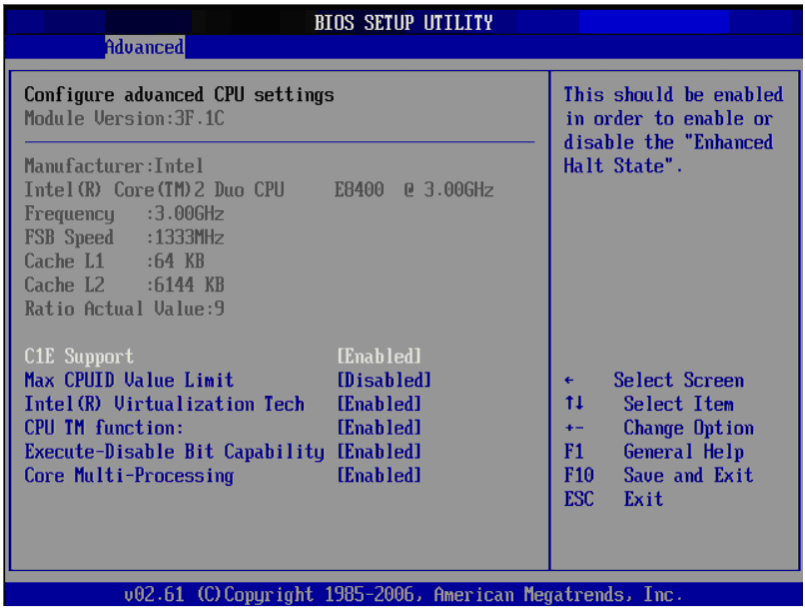
The sub menus are described on the following pages.



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.1 CPU Configuration

You can use this screen to select options for the CPU Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the CPU Configuration screen is shown below.



C1E Support

This option should be enabled in order to support the "Enhanced Halt State".

Max CPUID Value Limit

When the computer is booted up, the operating system executes the CPUID instruction to identify the processor and its capabilities. Before it can do so, it must first query the processor to find out the highest input value CPUID recognized. This

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

determines the kind of basic information CPUID can provide the operating system. This option allows you to circumvent problems with older operating systems.

When Enabled, the processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value. When Disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

Intel® Virtualization Tech

When enabled, Intel® Virtualization Technology (Intel® VT) makes a single system appear as multiple independent systems to software. This allows for multiple, independent operating systems to be running simultaneously on a single system.

CPU TM Function

Depending on the model of CPU installed, this option can control the CPU frequency and voltage according to its temperature.

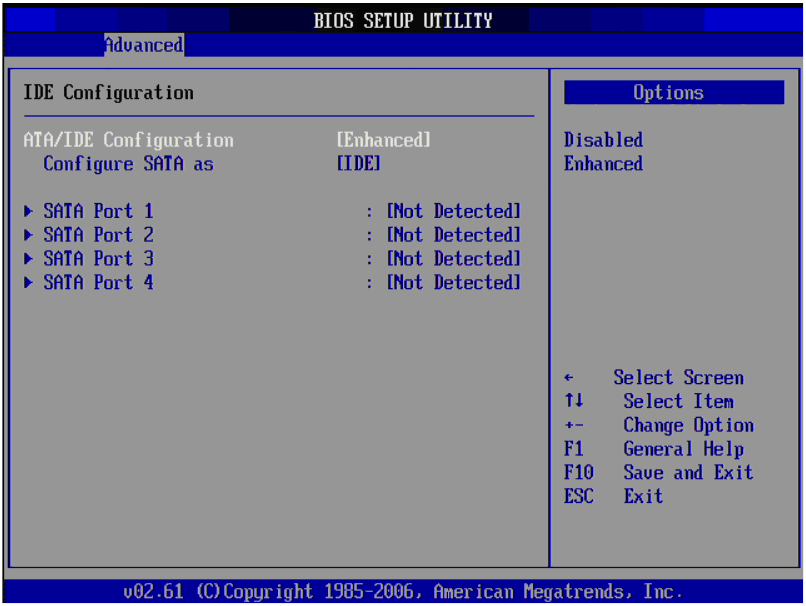
Core Multi-Processing

This item enables/disables multi-core processing functionality for multi-core processors.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.2 IDE Configuration

You can use this screen to select options for the IDE Configuration Settings. Use the up and down < Arrow > keys to select an item. Use the < + > and < - > keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages. An example of the IDE Configuration screen is shown below.



ATA/IDE Configuration

Allows you to disable or enable SATA Configuration function. Options: [Disabled], [Enhanced]

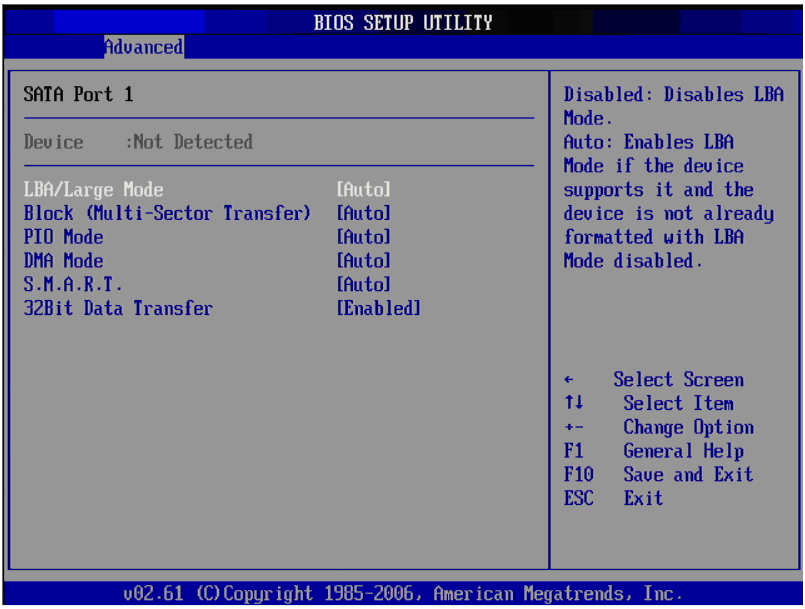
Configure SATA as

The AHCI allows the onboard storage drive to enable advanced Serial ATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands. If you want to create a RAID 0, RAID 1, RAID 5, RAID 10, or the Intel® Matrix Storage Technology configuration from the Serial ATA hard disk drives, set this item to [RAID].

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

SATA 1~6

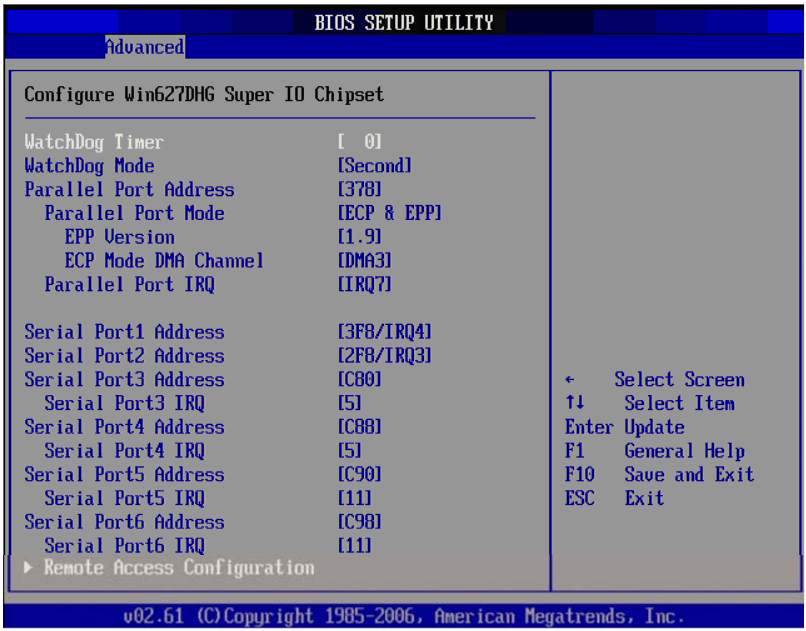
The BIOS automatically detects the presence of SATA devices.There is a separate sub-menu for each IDE device. Select a device item then press <Enter> to display the SATA device information and adjust user configurable parameters.



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.3 Super IO Configuration

You can use this screen to select options for the Super IO settings. Use the up and down < Arrow > keys to select an item. The settings are described on the following pages. The screen is shown below.



Watchdog Timer

Sets the BIOS Watchdog Timer (seconds or minutes).

Watchdog Mode

Sets the BIOS Watchdog Timer count mode.
Options: [Second], [Minute]

Parallel Port Address

Allows BIOS to select parallel port base address.

Options: [378], [278]

Parallel Port Mode

Allows BIOS to select parallel port mode. Options: [Disabled], [Bi-Directional], [ECP], [EPP], [ECP & EPP]

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

EPP Version

Allows BIOS to select parallel port EPP Version.
Options: [Disabled], [Bi-Directional], [ECP], [EPP], [ECP & EPP]

ECP Mode DMA Channel

Allows BIOS to select parallel port ECP DMA.
Options: [DMA0], [DMA1], [DMA3]

Parallel Port IRQ

Allows BIOS to select parallel port IRQ.
Options: [IRQ5], [IRQ7]

Serial Port1 Address

Select an address and a corresponding interrupt for Serial Port1. Options: 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3.

Serial Port2 Address

This option specifies the base I/O port address and Interrupt Request address of Serial Port2. The settings of Serial Port2 are the same as Serial Port1. However, the setting used by Serial Port1 will not be available for Serial Port2. For example, if Serial Port1 uses 3F8/IRQ4, the option, the 3F8/IRQ4 will not appear in the options of Serial Port2.

Serial Port3-6 Address

Allows BIOS to select the serial port base address.
Options: [C80], [C88], [C90], [C98];

Serial Port3-6 IRQ

Allows BIOS to select the serial port IRQ, IRQ 7 can only be selected at Serial Port 6.
Options: [5], [7], [10], [11]

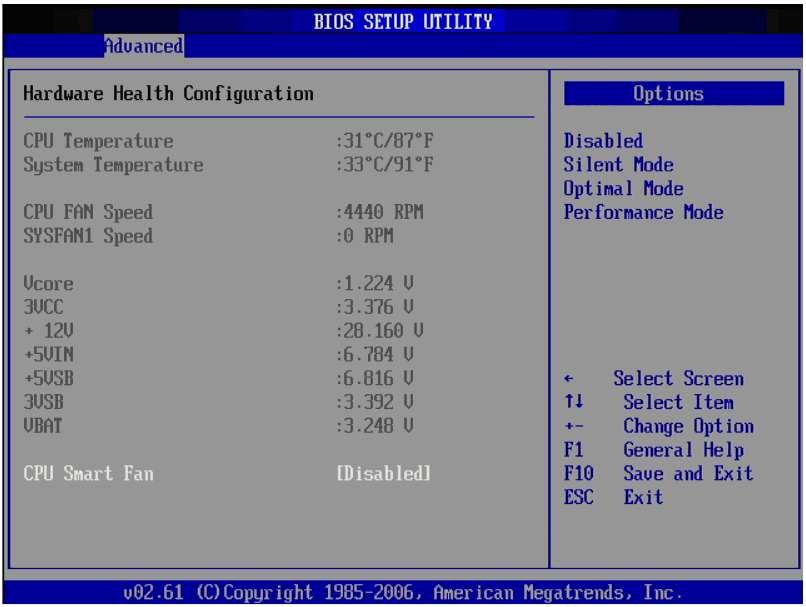
Remote Access Configuration

This submenu allows the user to to enable or disable the BIOS remote access feature.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.4 Hardware Health Configuration

This option displays the current status of all of the monitored hardware devices/components such as voltages and temperatures. The options are Enabled and Disabled.



CPU Smart Fan

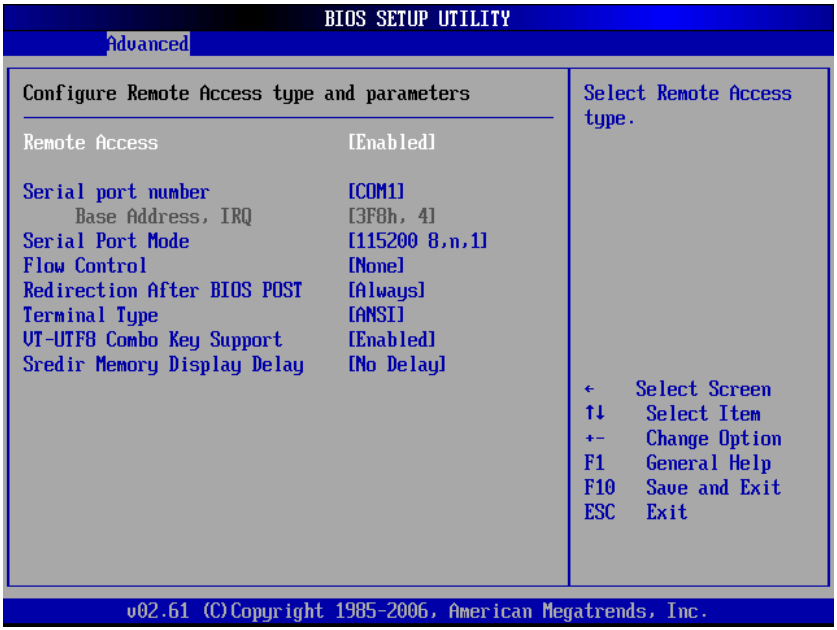
Allows you to select the CPU FAN profile mode. Options:

- **Disabled**
- **Silent Mode:** Keeps system at quieter than Optimized Mode with lower fan speed.
- **Optimized Mode:** Keeps a balance between CPU temperature and fan speed.
- **Performance Mode:** Keeps CPU at a lower temperature than Optimized Mode with faster fan speed

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.5 Remote Access Configuration

Remote access configuration provides the settings to allow remote access by another computer to get POST messages and send commands through serial port access.



Remote Access

Select this option to Enable or Disable the BIOS remote access feature.

Note: Enabling Remote Access requires a dedicated serial port connection. Once both serial ports are configured to disabled, you should set this value to Disabled or it may cause abnormal boot.

Serial Port Number

Select the serial port you want to use for the remote access interface. You can set the value for this option to COM1 or COM2.

Note: If you have changed the resource assignment of the serial ports in Advanced> SuperIO Configuration, you must Save Changes and Exit, reboot the system, and enter the setup menu again in order to see those changes reflected in the available Remote Access options.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Serial Port Mode

Select the baud rate you want the serial port to use for console redirection. The options are 115200 8,n,1; 57600 8,n,1; 19200 8,n,1; and 09600 8,n,1.

Flow Control

Set this option to select Flow Control for console redirection. The settings for this value are None, Hardware, or Software.

Redirection After BIOS POST

This option allows you to set Redirection configuration after BIOS POST. The settings for this value are Disabled, Boot Loader, or Always.

- **Disabled:** Set this value to turn off the redirection after POST
- **Boot Loader:** Set this value to allow the redirection to be active during POST and Boot Loader.
- **Always:** Set this value to allow the redirection to be always active.

Terminal Type

This option is used to select either VT100/VT-UTF8 or ANSI terminal type. The settings for this value are ANSI, VT100, or VT-UTF8.

VT-UTF8 Combo Key Support

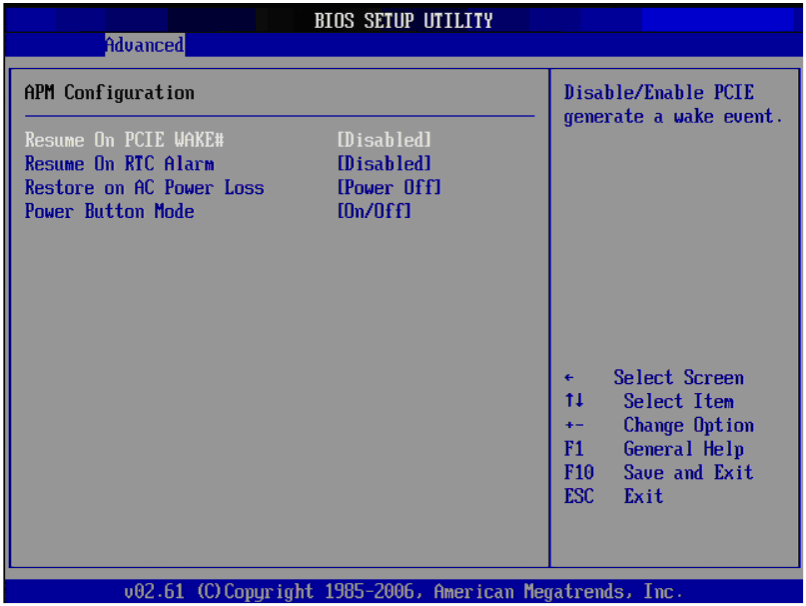
This option enables VT-UTF8 Combination Key Support for ANSI/VT100 terminals. The settings for this value are Enabled or Disabled.

Sredir Memory Display Delay

This option gives the delay in seconds to display memory information. The options for this value are No Delay, Delay 1 Sec, Delay 2 Sec, or Delay 4 Sec.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.3.6 APM Configuration



Resume On PCIE WAKE#

Allows you to enable or disable resuming from PCIE wake message and WAKE# signal.

Resume On RTC Alarm

When enabled, your can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

Restore on AC Power Loss

Determines which state the computer enters when AC power is restored after a power loss. The options for this value are Last State, Power On and Power Off.

- **Power Off:** Set this value to always power off the system while AC power is restored.
- **Power On:** Set this value to always power on the system while AC power is restored.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

- **Last State:** Set this value to power off/on the system depending on the last system power state while AC power is restored.

Power Button Mode

This option specifies the effect when the power button pressed.

- **On/Off:** The system is powered down immediately if the power button is pressed.
- **Suspend:** The system is powered down if the power button is pressed for more than four seconds. Pressing the button momentarily (for less than 4 seconds) will put the system in "suspend" mode.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.4 PCI/PnP Settings

Select the PCI/PnP tab from the setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the < Arrow > keys. The Plug and Play BIOS Setup screen is shown below.



Clear NVRAM

Clear NVRAM during system boot. Options: [No], [Yes]

Plug & Play O/S

Set this value to allow the system to modify the settings for Plug and Play operating system support. Options: [No], [Yes]

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

PCI Latency Timer

Set this value to allow the PCI Latency Timer to be adjusted. This option sets the latency of all PCI devices on the PCI bus. Options: [32], [64], [96], [128], [160], [192], [224], [248]

Palette Snooping

Set this value to allow the system to modify the Palette Snooping settings.

PCI IDE BusMaster

Set this value to allow or prevent the use of PCI IDE bus mastering.

OffBoard PCI/ISA IDE Card

Set this value to allow the OffBoard PCI/ISA IDE Card to be selected. If you select AUTO,BIOS will auto to select the location of an OffBoard PCI IDE adapter card. Options: [Auto], [PCI Slot1], [PCI Slot2], [PCI Slot3], [PCI Slot4], [PCI Slot5], [PCI Slot6]

IRQ/DMA

Set this value to allow the IRQ settings to be modified.

- **Available:** This setting allows the specified IRQ/DMA to be used by a PCI/PnP device.
- **Reserved:** This setting allows the specified IRQ/DMA to be used by a legacy ISA device.

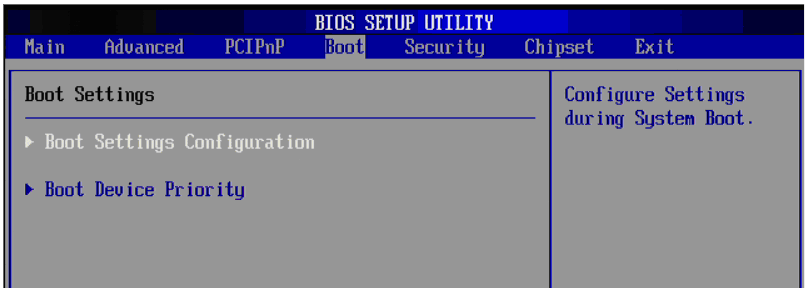
Reserved Memory Size

Set this value to allow the system to reserve memory that is used by ISA devices. Options: [Disabled], [16k], [32k], [64k]

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

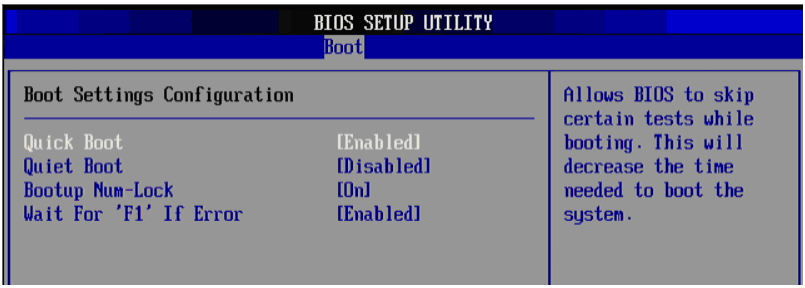
5.5 Boot Settings

Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display a Boot BIOS Setup option by highlighting it using the < Arrow > keys. The Boot Settings screen is shown below:



5.5.1 Boot Settings Configuration

Use this screen to select options for the Boot Settings Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Quick Boot

Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

Quiet Boot

When this feature is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

Bootup Num-Lock

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

Wait For 'F1' If Error

Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system. Options: [Disabled], [Enabled]

5.5.2 Boot Device Priority

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. First press <Enter> to enter the sub-menu. Then you may use the arrow keys to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.6 Security Setup



Change Supervisor Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the supervisor password.

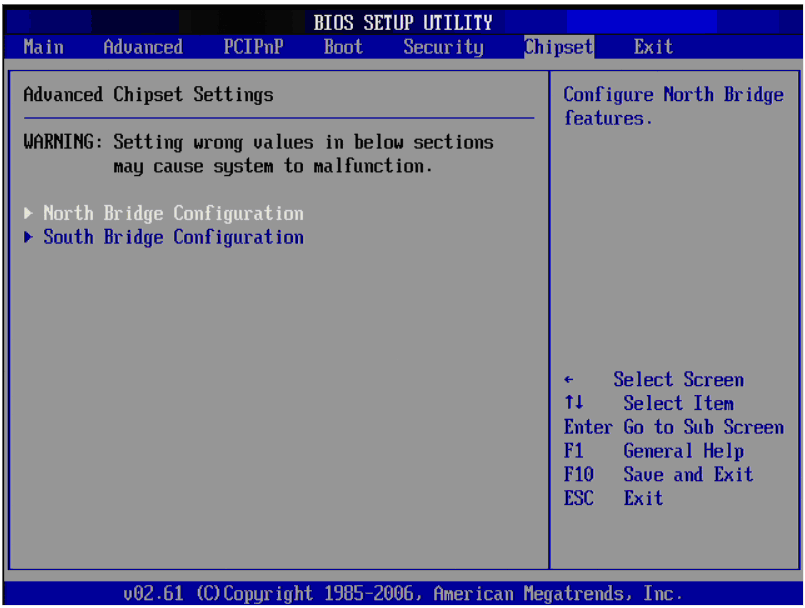
Change User Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the user password.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.7 Chipset Setup

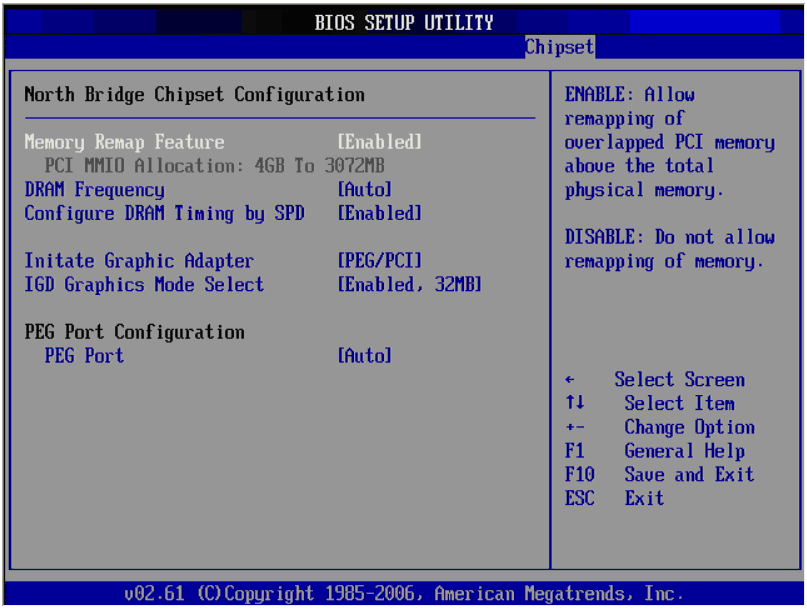
Select the Chipset tab from the setup screen to enter the Chipset BIOS Setup screen. You can select any of the items in the left frame of the screen to go to the sub menu for that item. The Chipset BIOS Setup screen is shown below.



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.7.1 North Bridge Configuration

You can use this screen to select options for the North Bridge Configuration. Use the up and down < Arrow > keys to select an item. Use the < Plus > and < Minus > keys to change the value of the selected option.



Memory Remap Feature

Set this value to allow the system to enable or disable remapping of overlapped PCI memory above the total physical.

DRAM Frequency

Set this value to allow the system to modify the DRAM Frequency settings.
Options: [Auto], [667 MHz], [800 MHz], [1066 MHz].

Configure DRAM Timing by SPD

Set this value to allow the system to enable or disable the Configure DRAM Timing by SPD settings.
Options: [Enabled], [Disabled]

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Initial Graphics Adapter

Select which graphics controller to use as the primary boot device.

- **IGD:** Chipset built-in graphics only.
- **PCI/IGD:** detect PCI graphics first, then chipset built-in graphics. (PCI includes PCI slot and PCI Express x1/x4 slot, PCI will be first)
- **PCI/PEG:** detect PCI graphics first, then PCI Express x16 graphics.
- **PEG/IGD:** detect PCI Express x16 graphics first, then chipset built-in graphics.
- **PEG/PCI:** detect PCI Express x16 graphics first, then PCI graphics, then chipset built-in graphics.

DVMT Mode Select

Dynamic Video Memory Technology (DVMT) allows dynamic allocation of system memory resource for the integrated VGA controller depending on system demand at the time.

Fixed: When set to fixed, the graphics driver will reserve a fixed portion of the system memory as graphics memory.

DVMT: When set to DVMT, the graphics chip will dynamically allocate system as graphics memory as graphics memory.

Both: When set to Both, a minimum amount of memory is allocated and the system is allowed to dynamically allocated more memory resources when necessary.

IGD Graphics Mode Select

Select the amount of system memory used by the internal graphics device. Options: [Disabled], [Enabled, 32MB], [Enabled, 64MB], [Enabled,128MB]

PEG Port Configuration

This field is found in motherboards that have a build-in graphics processor as well as a PCI Express port. It allows you to select whether to use the onboard graphics processor or the PCI Express card.

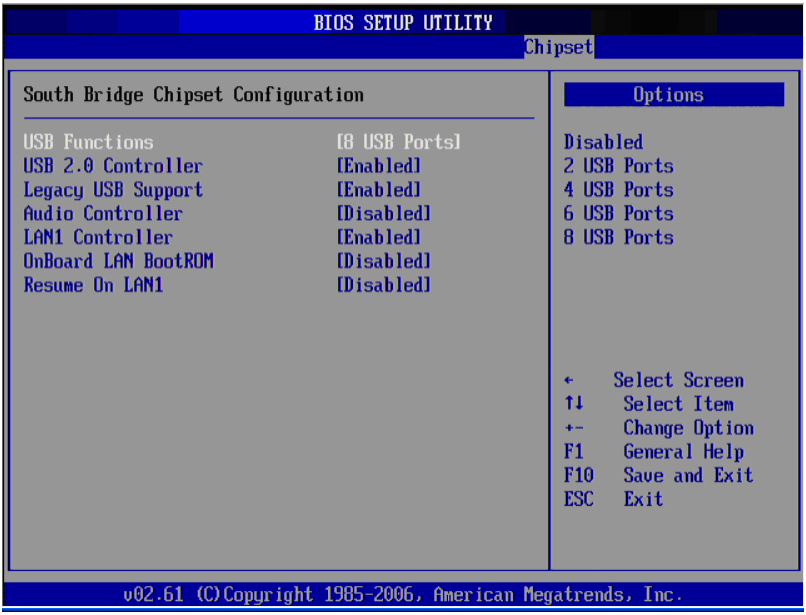
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Disabled: The motherboard boots up using the onboard graphics processor.

Auto: The BIOS checks to see if a PCI Express graphics card is installed. If it detects that a PCI Express graphics card is present, the motherboard boots up using that card. Otherwise, it defaults to the onboard graphics processor.

5.7.2 South Bridge Configuration

You can use this screen to select options for the South Bridge Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



USB Functions

Set this value to allow the system to Disable or select the number of onboard USB ports. Options: [Disabled], [2 USB Ports], [4 USB Ports], [6 USB Ports], [8 USB Ports]

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

USB 2.0 Controller

Enables/disables USB 2.0 functionality to all USB ports. If USB Function is set to Disabled, this option has no effect.

Legacy USB Support

Legacy USB Support refers to USB mouse and keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there are no USB drivers loaded on the system. Set this value to enable or disable the Legacy USB Support.

- **Disabled:** Set this value to prevent the use of any USB device in DOS or during system boot.
- **Enabled:** Set this value to allow the use of USB devices during boot and while using DOS.
- **Auto:** This option auto detects USB Keyboards or Mice and if found, allows them to be utilized during boot and while using DOS.

Audio Controller

Set this value to Enable/Disable the Audio Controller.

OnBoard LAN BootROM

Allows you to enable or disable the LAN BootROM.
Options: [Enabled], [Disabled]

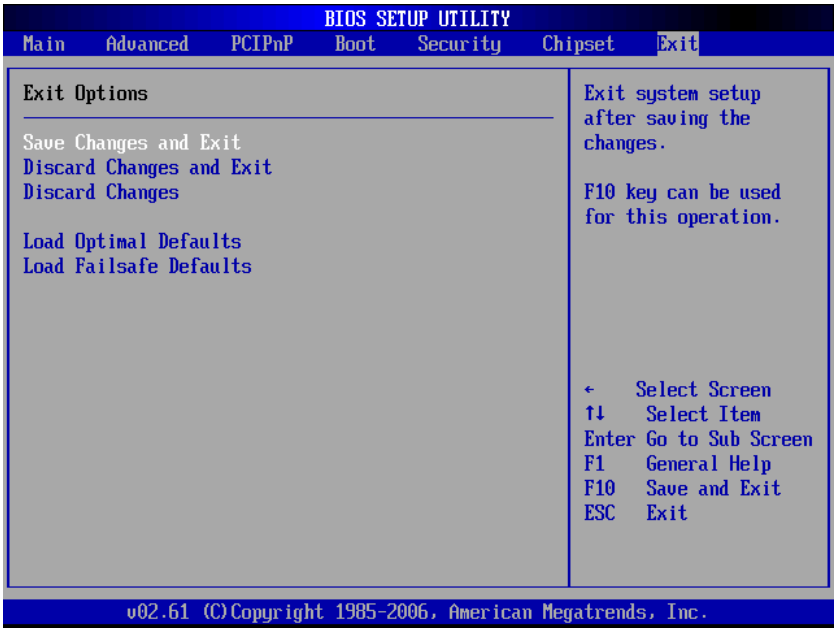
Resume On LAN1

Allows you to enable or disable the LAN GPI to generate a wake event. Options: [Disabled], [Enabled]

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.8 Exit Menu

Select the Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the < Arrow > keys. The Exit BIOS Setup screen is shown below.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect.

Save Configuration Changes and Exit Now?

[Ok] [Cancel]

appears in the window. Select Ok to save changes and exit.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Discard Changes and Exit

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

Discard Changes and Exit Setup Now?

[Ok] [Cancel]

appears in the window. Select Ok to discard changes and exit.

Discard Changes

Select Discard Changes from the Exit menu and press < Enter >.

Select Ok to discard changes.

Load Optimal Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems.

Select Load Optimal Defaults from the Exit menu and press < Enter >.

Select Ok to load optimal defaults.

Load Failsafe Defaults

Automatically sets all Setup options to a complete set of default settings when you select this option. The Failsafe settings are designed for maximum system stability, but not maximum performance. Select the FailSafe Setup options if your computer is experiencing system configuration problems.

Select Load Fail-Safe Defaults from the Exit menu and press < Enter >.

Load FailSafe Defaults?

[Ok] [Cancel]

appears in the window. Select Ok to load FailSafe defaults.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Appendix A - Watchdog Timer

The following is a sample program for configuring the NuPRO-E315's watchdog timer.

A.1 Sample Code

Unlock W83627DHG-A:

```
outportb(0x2E, 0x87)    ;Unlock Super I/O
```

Select Logical Device:

```
outportb(0x2E, 0x07)    ;Select device number register
outportb(0x2F, 0x08)    ;Set to Logical Device 8
```

Activate WDT:

```
outportb(0x2E, 0x30)    ;Select WDTO# activate register
outportb(0x2F, 0x01)    ;Enable watchdog
```

Set Seconds or Minutes:

```
outportb(0x2E, 0xF5)    ;Select WDTO# control register
outportb(0x2F, mode)    ;where mode=0x00(Sec) or 0x08(Min)
```

Set Base Timer:

```
outportb(0x2E, 0xF6)    ;Select WDTO# counter register
outportb(0x2F, timeout) ;where timeout=0x00~0xFF
```

Reset Timeout Counter:

```
outportb(0x2E, 0xF6)    ;Select WDTO# counter register
outportb(0x2F, timeout) ;where timeout=0x00~0xFF}
```

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Appendix B System Resources

B.1 System Memory Map

Address Range (decimal)	Address Range (hex)	Size	Description
(4GB-8MB)	FFE00000 – FFFFFFFF	8 MB	High BIOS Area
(4GB-18MB) – (4GB-17MB-1)	FEE00000 – FEEFFFFF	1 MB	FSB Interrupt Memory Space
(4GB-20MB) – (4GB-19MB-1)	FEC00000 – FECFFFFF	1 MB	APIC Configuration Space
960 K – 1024 K	F0000 – FFFFF	64 KB	System BIOS Area
896 K – 960 K	E0000 – EFFFF	64 KB	Extended System BIOS Area
768 K – 896 K	C0000 – DFFFF	128 KB	PCI expansion ROM area
640 K – 768 K	A0000 – BFFFF	128 KB	Video Buffer & SMM space
0 K – 640 K	00000 – 9FFFF	640 KB	DOS Area

Table B-1: System Memory Map

Note: The entire D0000H segment except PXE occupied area can be forwarded to ISA bus.

B.2 Direct Memory Access Channels

Channel Number	Data Width	System Resource
0	–	Open
1	–	Open
2	–	Open
3	–	Parallel port
4	–	DMA Controller
5	–	Open
6	–	Open
7	–	Open

Table B-2: Direct Memory Access Channels

Note (1): DMA channel 0/1/3 is selected when using parallel port. Floppy and parallel port cannot be used at the same time.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

B.3 IO Map

Hex Range	Device
000-00F	DMA controller 1
010-01F	Motherboard resources
020-021	Programable interrupt controller
022-03F	Motherboard resources
040-043	System timer
044-04D	Motherboard resources
050-05F	Motherboard resources
060	Standard 101/102-Key or Microsoft Natural PS/2 Kbd.
061	System speaker
062-063	Motherboard resources
064	Standard 101/102-Key or Microsoft Natural PS/2 Kbd.
065-06F	Motherboard resources
070-071	System CMOS/Real time clock
080	Motherboard resources
081-083	Direct memory access controller
084-086	Motherboard resources
087	Direct memory access controller
088	Motherboard resources
089-08B	Direct memory access controller
08C-08E	Motherboard resources
08F	Direct memory access controller
090-09F	Motherboard resources
0A0-0A1	Programable interrupt controller
0A2-0BF	Motherboard resources
0C0-0DF	Direct memory access controller
0E0-0EF	Motherboard resources
0F0-0FF	Numeric date processor
170-177	Secondary IDE Channel
274-277	ISAPNP Read Date Port
279	ISAPNP Read Date Port
290-29F	Motherboard resources

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Hex Range	Device
2F8-2FF	Communications Port (COM2)
376-376	Secondary IDE Channel
378-37F	ECP Printer Port (LPT1)
3B0-3BB	Intel G41 Express Chipset
3C0-3DF	Intel G41 Express Chipset
3F6	Primary IDE Channel
3F8-3FF	Communications Port (COM1)
400-41F	Intel N10/ICH7 Family SMBus Controller
480-4BF	Motherboard resources
4D0-4D1	Motherboard resources
778-77F	ECP Printer Port (LPT1)
800-87F	Motherboard resources
A00-A0F	Motherboard resources
A60-A6F	Motherboard resources
A79-A79	ISAPNP Read Date Port
C80-C87	Communications Port (COM3)
C88-C8F	Communications Port (COM4)
C90-C97	Communications Port (COM5)
C98-C9F	Communications Port (COM6)

Table B-3: IO Map

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

B.4 Interrupt Request (IRQ) Lines - APIC Mode

IRQ#	Typical Interrupt Resource	Connected to Pin
0	System timer	N/A
1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	N/A
2	N/A	N/A
3	Communications Port (COM2)	IRQ3 via SERIRQ, IRQ3 at LPC
4	Communications Port (COM1)	IRQ4 via SERIRQ, IRQ4 at LPC
5	Communications Port (COM3)	IRQ5 via SERIRQ, IRQ5 at LPC
5	Communications Port (COM4)	IRQ5 via SERIRQ, IRQ5 at LPC
6	N/A	N/A
7	N/A	N/A
8	System CMOS/real time clock	N/A
9	Microsoft ACPI-Compliant System	I
10	N/A	N/A
11	Communications Port (COM5)	IRQ11 via SERIRQ, IRQ12 at LPC
11	Communications Port (COM6)	IRQ11 via SERIRQ, IRQ12 at LPC
12	Microsoft PS/2 Mouse	N/A
13	Numeric data Processor	N/A
14	Primary IDE Channel	N/A
15	Secondary IDE Channel	N/A
5	Intel N10/ICH7 Family SMBus Controller	N/A
16	Intel 82574L Gigabit Network Connection	N/A
16	Intel G41 Express Chipset	N/A
16	Intel CIH7 Family PCI Express Root Port	N/A
16	Intel N10/ CIH7 Family PCI Express Root Port	N/A
16	Intel N10/CIH7 Family USB Universal Host Controller	N/A

Table B-4: IRQ Lines APIC Mode

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

B.5 PCI Configuration Space Map

Bus #	Device #	Function #	Routing	Description
00h	00h	00h	N/A	Intel G41 Host Processor Bridge
00h	02h	00h	Internal	Intel Integrated Graphics Device
00h	1Ch	00h	Internal	PCI Express Bridge
00h	1Ch	04h	Internal	PCI Express Bridge
00h	1Dh	00h	Internal	Intel USB
00h	1Dh	01h	Internal	Intel USB
00h	1Dh	02h	Internal	Intel USB
00h	1Dh	03h	Internal	Intel USB
00h	1Dh	07h	Internal	Intel USB
00h	1Eh	00h	Internal	Intel PCI Bridge
00h	1Fh	00h	Internal	Intel ISA Bridge
00h	1Fh	01h	Internal	Intel IDE
00h	1Fh	02h	Internal	Intel IDE
00h	1Fh	03h	Internal	Intel Serial Bus Controller
02h	00h	00h	External	Intel Ethernet
03h	0Fh	00h	External	PCI Bridge

Table B-5: PCI Configuration Space Map

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

B.6 PCI/PCIe Interrupt Routing Map

PIRQ	A	B	C	D	E	F	G	H
INT Line	INTA	INTB	INTC	INTD				
P.E.G Root Port	INTA	INTB	INTC	INTD				
VGA	X							
SATA Controller				X				
SMBus controller			X					
EHCI								X
HDA	X						X	
Intel GBE					X			
IDE Controller			X					
PCIE port 0	INTB	INTA	INTC	INTD				
PCIE port 4	INTA	INTB	INTC	INTD				
PCIE port 5	INTB	INTC	INTD	INTA				
PCIE port 6	INTC	INTD	INTA	INTB				
PCIE port 7	INTD	INTA	INTB	INTC				
PCI Slot 1				X				
PCI Slot 2			X					
PCI Slot 3		X						
PCI Slot 4	X							
PCI Slot 5								X

Table B-6: PCI/PCIe Interrupt Routing Map

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

A Lithium-type battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Getting Service

Contact us should you require any service or assistance.

ADLINK Technology, Inc.
Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
新北市中和區建一路 166 號 9 樓
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 5215 Hellyer Avenue, #110, San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park,
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology Beijing
Address: 北京市海淀区上地东路 1 号盈创动力大厦 E 座 801 室(100085)
Rm. 801, Power Creative E, No. 1, B/D
Shang Di East Rd., Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8625
Email: market@adlinktech.com

ADLINK Technology Shenzhen
Address: 深圳市南山区科技园南区高新南七道 数字技术园
A1 栋 2 楼 C 区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7,
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

ADLINK Technology (Europe) GmbH
Address: Nord Carree 3, 40477 Duesseldorf, Germany
Tel: +49-211-495-5552
Fax: +49-211-495-5557
Email: emea@adlinktech.com

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

ADLINK Technology, Inc. (French Liaison Office)
Address: 15 rue Emile Baudot, 91300 Massy CEDEX, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

ADLINK Technology Japan Corporation
Address: 〒101-0045 東京都千代田区神田鍛冶町 3-7-4
神田 374 ビル 4F
KANDA374 Bldg. 4F, 3-7-4 Kanda Kajicho,
Chiyoda-ku, Tokyo 101-0045, Japan
Tel: +81-3-4455-3722
Fax: +81-3-5209-6013
Email: japan@adlinktech.com

ADLINK Technology, Inc. (Korean Liaison Office)
Address: 서울시 서초구 서초동 1675-12 모인터빌딩 8 층
8F Mointer B/D,1675-12, Seocho-Dong, Seocho-Gu,
Seoul 137-070, Korea
Tel: +82-2-2057-0565
Fax: +82-2-2057-0563
Email: korea@adlinktech.com

ADLINK Technology Singapore Pte. Ltd.
Address: 84 Genting Lane #07-02A, Cityneon Design Centre,
Singapore 349584
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

ADLINK Technology Singapore Pte. Ltd. (Indian Liaison Office)
Address: 1st Floor, #50-56 (Between 16th/17th Cross) Margosa Plaza,
Margosa Main Road, Malleswaram, Bangalore-560055, India
Tel: +91-80-65605817, +91-80-42246107
Fax: +91-80-23464606
Email: india@adlinktech.com

ADLINK Technology, Inc. (Israeli Liaison Office)
Address: 6 Hasadna St., Kfar Saba 44424, Israel
Tel: +972-9-7446541
Fax: +972-9-7446542
Email: israel@adlinktech.com

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000