NEXCOM International

Network Security Appliance (NSA) 1041N7

User Manual

NEXCOM International
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Package Contents

Before continuing, verify that the NSA 1041N7 package that you received is complete. Your NSA 1086N7 package should have all the items listed in the following table.

Item	P/N.	Name	Spec.	Qty	
1	19S01041N00X0	NSA1041N7		1	PCS
2	60177A0108X00	NSA1041N7 QUICK REFERENCE GUIDE REV:A		1	PCS
3	60233PS203X00	EBC563IO PS2 KB/MS CABLE EDI:201061080201-RS	PS2 TO JST 8PIN 2.54mm L:200mm+-10mm	1	PCS
4	6029900037X00	DOW CORNING 340 Silcone Heat Sink Compound(3g)		1	PCS
5	602DCD0129X00	NSA1041N7 CD DRIVER VER:1.0		1	PCS
6	5060900075X00	NSA1086N7 EAR SETS CHYUAN-JYH:L102007-3	79.5x43.5x28mm AL PANTONE 295U	1	PCS
7	60233PW102X00	POWER CABLE EDI:352204040081-RS	SATA 15PIN TO 3022H-04 4PIN PITCH 5.08mm,L:80mm	1	PCS
8	50311F0102X00	ROUND HEAD SCREW LONG FEI:P6#32Tx 1/4/SW7*0.8	W/SPRING+FLAT WASHER P6#32Tx 1/4/ SW7x0.8 NI	4	PCS
9	5043330139X00	EBC500 CF CARD BRACKET	51.6x47x5mm SPCC T=1.0mm NI	1	PCS
10	50311F0100X00	ROUND HEAD SCREW W/SPRING+FLAT WASHER LONG FEI: P3x6L	P3x6 iso/SW6x0.5 NI	2	PCS
11	60233ATA05X00	NSA2127-CB SATA CABLE VERA TECH	L:250mm	1	PCS
12	6023309082X00	COM TO RJ45 CABLE FOR CISCO EDI:232091081808-RS	COM PORT. DB9 FEMALE TO RJ45 8P8C L:1800mm	1	PCS

PREFACE

Copyright

Disclaimer

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Acknowledgements

The NSA 1041N7 series is a trademark of NEXCOM international CO., LTD. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Federal Communications Commission (FCC) For Class A Device

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

CE Certification

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

WARNINGS

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

CAUTION

Electrostatic discharge (ESD) can damage NSA components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

- Before installing and using the device, note the following precautions:
- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rack mounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.

Global Service Contact Information

Headquarters

NEXCOM International Co, Ltd.
18F, No. 716, Chung-Cheng Road
Chung-Ho City, Taipei County 235
Taiwan, R.O.C.
Tel: 886-2-8228-0606
Fax: 886-2-8228-0501
Email: sales@nexcom.com.tw

USA

NEXCOM USA
3758. Spinnaker Court
Fremont, CA 94538, USA
Tel: 1-5 10-656-2248
Fa: 1-51 0.656-21 58
www.nexcom.com
Email: sales@nexcom.com

France

NEXCOM France
Z.I. des Amandiers
17, Rue des entrepreneurs
78420 Carrières sur Seine, France
Tel: +33 (0)1 71 51 10 20
Fax: +33 (0)1 71 51 10 21
www.nexcom.com

Germany

NEXCOM GmbH
Leopoldstraße Business Centre
Leopoldstraße 244
80807 Munich, Germany
Tel: 49-8920-8039275
Fax: 49-8920-8039279
Email: info@nexcom-gmbh.de
www.nexcom.com

United Kingdom

NEXCOM UK
10 Vincent Avenue,
Crownhill Business Centre
Milton Keynes, Buckinghamshire
MK8 0AB, United Kingdom
Tel: 44-1908-267121
Fax: 44-1908-262042
Email: sales@nexcomuk.co.uk
www.nexcomuk.co.uk

Japan

NEXCOM Japan
1OF, Nakagin-Shiroyama Building
8-16-13. Ginza Chuou-KU
Tokyo 104-0061, Japan
Tel: 81-3-3524-4250
Fax: 81-3-3524-4252
www.nexcom-jp.com
Email: sales@nexcom-jp.com

China

NEXCOM China
Room 301, Block E
Power Creative Building
No. 1 Shangdi East Rd.
Haidian District
Beijing, 100085, China
Tel: 86-1 0-5885-6655
Fax: 86-1 0-5885-1066
www.nexcom.cn
Email: sales@nexcom.cn

Chapter 1: Introducing NSA 1041N7

Overview of NSA 1041N7

NSA 1041N7 is member of NEXCOM's family of superior x86-based network security appliance platforms. NSA 1041N7 is an ultra-reliable hardware platform with high performance CPU and Gigabit infrastructures.

With enhanced network connectivity and expansion capability, the NSA 1041N7 is the ideal platform for building network security applications (such as IDS/IPS, anti-virus/anti-spyware/anti-spam and load balancing) intended for enterprise-classenvironments.

Key Features

NSA 1041N7 provides the following key features:

- 1U rackmount network platform
- Compliance and full compatibility with RoHS
- CPU Onboard – VIA® CPU C7 1.5GHz, 400MHz FSB Processors
- VIA® CN700 and 8237R+ Chipsets
- One 240-pin DDR-II DIMM Socket supporting unbuffered non-ECC DDR 533 up to 1GB
- Supports CompactFlash and SATA/IDE interfaces

Front and Rear Panels

The following figures show the front and rear panels of the NSA 1041N7.

Hardware Specifications

The following are the hardware specifications for NSA 1041N7.

Chassis

- Model Name: NSC1042N7
- 1U Rackmount chassis
- Supports the NSB1041N7 or NSB1042N7 main board
- Support one SATA 3.5" HDD bay
- Four RJ45 for GLAN, One RJ45 for RS-232

- Dimensions: 426mm (W) x 362mm (L) x 44mm (H)
- Weight: 3.8 kg

Motherboard

- Model Name: NSB1041N7
- Dimensions: 325mm x 320mm

Processor

- CPU onboard
- Supports CPU Up To C7 1.5GHz
- 90nm Process Technology
- 1.5GHz @ 400MHz FSB
- PowerSaver™ Technology enabled
- NanoBGA2 footprint
- 128/128K L1/L2 Cache

Memory

- One 240-pin DIMM Socket, up to 1GB un-buffered non-ECC DDR-II 533 SDRAM

Chipset

- VIA® CN700
- VIA® 8237R+

Graphic

- VIA® CN700 Integrated
- VGA pin header onboard

Network

- 4 x Intel 82541PI GbE LAN
- Bypass: LAN 1 and LAN 2 (Default), Dual-latch type
- PXE support
- Wake-on-LAN in LAN 4
- 4 x RJ45 with LED connector
- LAN status LED (ACT and LNK)

Board I/O

- RS-232 (RJ-45 type) connector for console only in front of chassis
- One 8 pin header for PS/2 Keyboard and Mouse
- 8 GPIO lines via Header (4 In and 4 Out)
- 1 x Pin Header for SIO
- 4 x 3-pin FAN WAFER connector for CPU and Chassis
- 1 x On Board buzzer
- 1 x Reset Button (From Programmable GPIO)
- Pin Header for PIO
- 1 x CF socket (with cover)
- 1 x 44-pin IDE connector
- 2 x SATA connector
- 1 x Power connector for 3.5" HDD
- 1 x Mini-PCI socket
- 1 x Right-angle PCI slot
- Pin Header(2.54) for LAN/System LED for rear side

Input/Output

- **Front I/O**
  - 1 x Power LED
  - 1 x HDD Active LED
  - 1 x Bypass LED (Green)
  - 3 x GPIO LED (Green/Blue)
  - 4 x RJ45 CNN with LED (ACT and LINK) for GLAN(1086N7) / Co-lay

1x4 or 1x2 – 2 sets

- 1 x RS-232(RJ-45) connector
- 2 x USB2.0 connector
- 1 x (2x16) LCD Module; Optional Back-light color (green/blue/orange)
- 1 x Software Reset button

- **Rear I/O**
  - 1 x PCI Expansion
  - 1 x Power On/Off switch

Expansion Slots

- 1 x Mini PCI slot
- 1 x PCI Slot – supports PCI expansion with IO on the rear side; supports the half-length PCI card.

System Management

- Monitoring of voltage, 3 x temperature and 4 x fans
- Watchdog timeout can be programmable by Software from 1 second to 128 seconds

RTC

- On-chip RTC with battery back up
- 1 x External Li-ion Battery

BIOS

- Award System BIOS
- 4M bits flash ROM

Main Board Power Design

- 180W FlexATX12V PFC Power Supply (150 x 81.5 x 40.5mm), FSP180-50PLA(N094) (P/N: 7420180006X00)
- 1 x Onboard ATX connector
- Reserved ATX/AT power design
- 1 x Power connector

Drivers

- Linux kernel 2.4 and 2.6 above

Manufacture Requirements

- Built-in ICT testing point and coverage must exceed 95%
- Minimal hand inserted and no hand soldered parts

Certifications

- CE/FCC approval Class A
- 60950 including CA,UL, and CE standards

Operating Temperature

- 0°C to 40°C

Storage Temperature

- -20°C to 85°C

Relative Humidity

- 10% to 95% non-condensing

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers on the NSA 1041N7 board. Note that the following procedures are generic for all NSA 1041N7 series.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers Screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards (such as the NSA1088E board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.

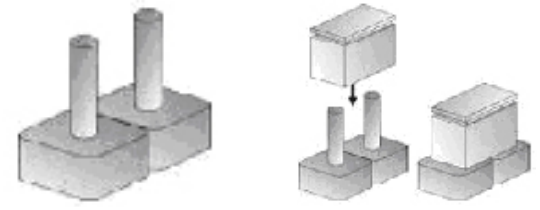
- Use correct screws and do not over tighten screws.

Jumper Settings

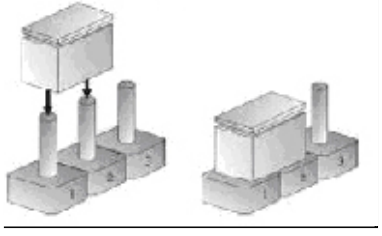
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **short**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **open**.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)

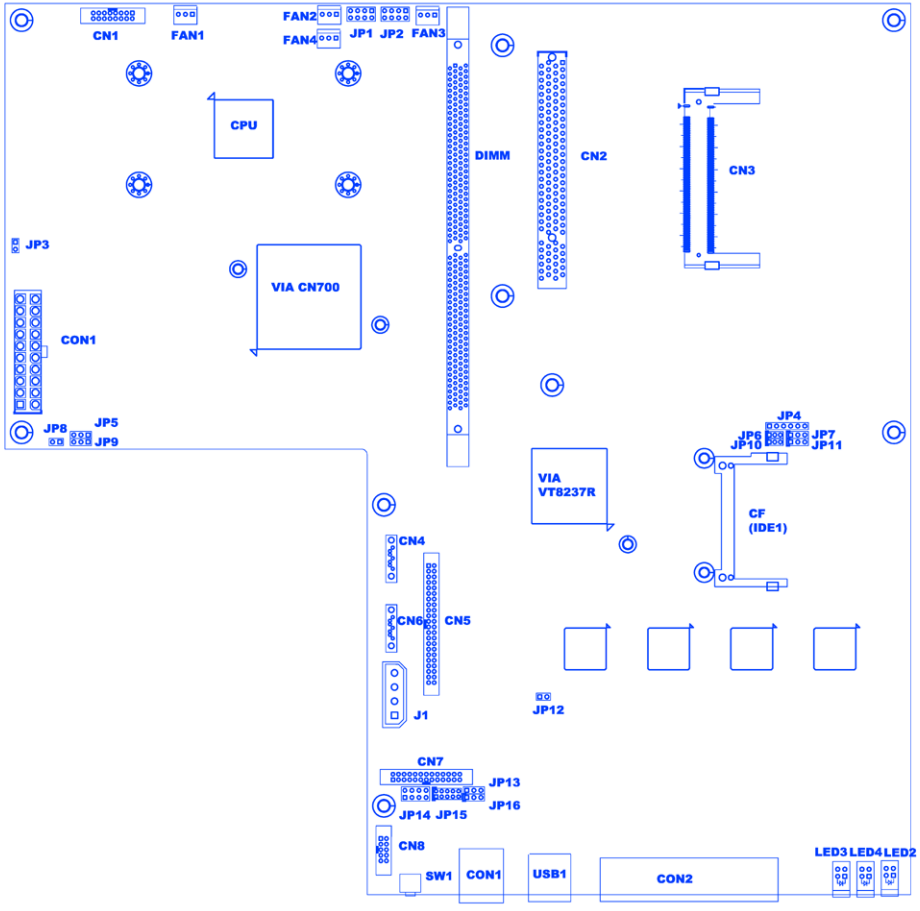


Three-Pin Jumpers: Pins 1 and 2 Are Short



Locations of Jumpers and Connectors

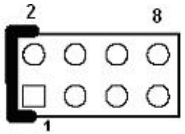
The following figure identifies the locations of the different jumpers and connectors on the NSA 1041N7 board. Use your PDF viewer's zoom function to enhance readability.



Pin Definitions

This section provides descriptions and illustrations for the pin definition of each available jumper, connector, or socket.

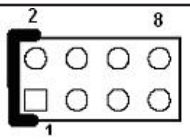
2.1 Lan Link Act LED



1. Connector location: JP1
2. Connector pin definition

Pin NO.	Description
1-2-5-6	+3.3V
3	ACTLED_C
4	LINK_C
7	ACTLED_D
8	LINK_D

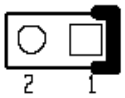
2.2 Lan Link Act LED



1. Connector location: JP2
2. Connector pin definition

Pin NO.	Description
1-2-5-6	+3.3V
3	ACTLED_A
4	LINK_A
7	ACTLED_B
8	LINK_B

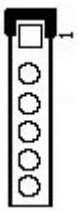
2.3 Power Button



1. Connector location: JP3
2. Connector pin definition

Pin NO.	Description
SHORT	ENABLE
OPEN	DISABLE

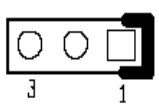
2.4 GAL PIN



1. Connector location: JP4
2. Connector pin definition

Pin NO.	Description
1	+3.3V
2	GND
3	TCK
4	TDO
5	TDI
6	TMS

2.5 AT / ATX MODE

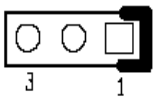


1. Connector location: JP5
2. Connector pin definition

Pin NO.	Description
1-2	ATX MODE
2-3	AT MODE

2.6 SMBUS

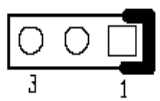
1. Connector location: JP6
2. Connector pin definition



Pin NO.	Description
1	SMB_DATA
2	SMB_CLK
3	GND

2.7 MINI PCI

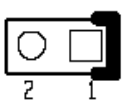
1. Connector location: JP7
2. Connector pin definition



Pin NO.	Description
1-2	+3VDAUL
2-3	+3.3V

2.8 Reset Button

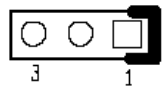
1. Connector location: JP8
2. Connector pin definition



Pin NO.	Description
SHORT	ENABLE
OPEN	DISABLE

2.9 AT MODE PS_ON

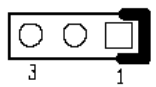
1. Connector location: J9
2. Connector pin definition



Pin NO.	Description
1-2	ATX MODE
2-3	AT MODE

2.10 SMBUS2

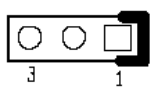
1. Connector location: JP10
2. Connector pin definition



Pin NO.	Description
1	SMB_DATA
2	SMB_CLK
3	GND

2.11 CF / IDE SELECT

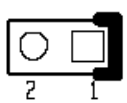
1. Connector location: JP11
2. Connector pin definition



Pin NO.	Description
1-2	CF Master
2-3	CF Slave

2.12 THERMAL DETECT

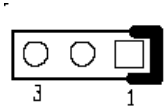
1. Connector location: JP12
2. Connector pin definition



Pin NO.	Description
SHORT	ENABLE
OPEN	DISABLE

2.13 RTC

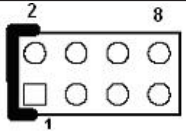
1. Connector location: JP13
2. Connector pin definition



Pin NO.	Description
1-2	NORMAL
2-3	CLEAR

2.14 KEYBOARD/MOUSE

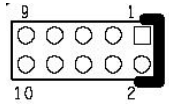
1. Connector location: JP14
2. Connector pin definition



Pin NO.	Description
1 , 2	5V
3	KBDATA
4	MSDATA
5	KBCLK
6	MSCLK
7 , 8	GND

2.15 GPIO PIN

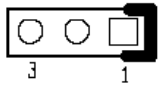
1. Connector location: JP15
2. Connector pin definition



Pin NO.	Description
1-3-5-7	GPI
2-4-6-8	GPO
9-10	GND

2.16 CONSOLE SELECT

1. Connector location: JP16
2. Connector pin definition



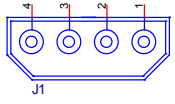
Pin NO.	Description
1-2	ON
2-3	OFF

2.17 Software Reset

1. Connector location: SW1
2. Connector pin definition

Pin NO.	Description
SHORT	ENABLE
OPEN	DISABLE

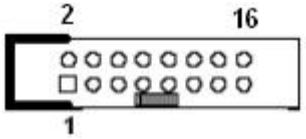
2.18 IDE POWER CON (J1)



Pin NO.	Descrip-tion	Pin NO.	Descrip-tion	Pin NO.	Descrip-tion

1	+12V	2 , 3	GND	4	+5V

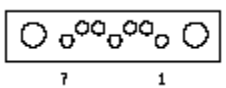
2.19 VGA (CN1)



2 x 8 2.0mm Box header

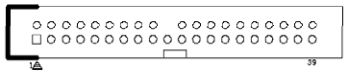
Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	VGA_R	2	VGA_G	3	VGA_B
4	NC	5	GND	6	GND
7	GND	8	GND	9	+5V
10	GND	11	NC	12	VGA_ DATA
13	VGA_HSY	14	VGA_VSY	15	VGA_CLK
16	NC				

2.20 SATA (CN4 , CN6)



Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	GND	2	STX_P	3	STX_N
4	GND	5	SRX_N	6	SRX_P
7	GND				

2.21 IDE CON (CN5)

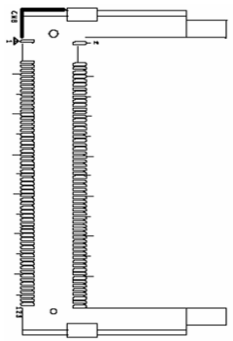


Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	-IDERST	2	GND	3	PDD7
4	PDD8	5	PDD6	6	PDD9
7	PDD5	8	PDD10	9	PDD4
10	PDD11	11	PDD3	12	PDD12
13	PDD2	14	PDD13	15	PDD1
16	PDD14	17	PDD0	18	PDD15
19	GND	20	NC	21	PDDREQ
22	GND	23	-PDIOW	24	GND
25	-PDIOR	26	GND	27	PHDRDY
28	GND	29	PDDACK	30	GND
31	IRQ15	32	NC	33	PDA1
34	DMA66 Detect	35	PDA0	36	PDA2
37	-PCS1	38	-PCS3	39	HD_LED
40	GND	41	VCC5	42	VCC5
43	GND	44	NC		

2.22 Main power Con (CON1)

Pin NO.	Descrip-tion	Pin NO.	Descrip-tion	Pin NO.	Descrip-tion
1,2,11	+3.3V	3,5,7	GND	13,15,16,17	GND
4,6,19,20	+5V	8	POWER_ OK	9	5VSB
10	+12V	12	-12V	14	PS_ON

2.23 MINI-PCI SLOT (CN3)



Pin NO.	Description	Pin NO.	Description
1	N/A	2	N/A
3	N/A	4	N/A
5	N/A	6	N/A
7	N/A	8	N/A
9	N/A	10	N/A
11	N/A	12	N/A
13	N/A	14	N/A
15	N/A	16	N/A
17	PCI_IRQ#D	18	VCC5
19	VCC3	20	PCI_IRQ#A
21	N/A	22	N/A
23	GND	24	+3.3VSB OR +3.3V
25	PCI_CLK0	26	PCI_RST#
27	GND	28	VCC3
29	PCI_REQ#0	30	PCI_GNT#0
31	VCC3	32	GND
33	PCI_AD31	34	PCI_PME#
35	PCI_AD29	36	N/A
37	GND	38	PCI_AD30
39	PCI_AD27	40	VCC3
41	PCI_AD25	42	PCI_AD28
43	N/A	44	PCI_AD26
45	PCI_CBE#3	46	PCI_AD24
47	PCI_AD23	48	PCI_AD19
49	GND	50	GND
51	PCI_AD21	52	PCI_AD22
53	PCI_AD19	54	PCI_AD20
55	GND	56	PCI_PAR
57	PCI_AD17	58	PCI_AD18

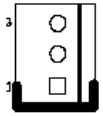
59	PCI_CBE#2	60	PCI_AD16
61	PCI_IRDY#	62	GND
63	VCC3	64	PCI_FRAME#
65	N/A	66	PCI_TRDY#
67	PCI_SERR#	68	PCI_STOP#
69	GND	70	VCC3
71	PCI_PERR#	72	PCI_DEVSEL#
73	PCI_CBE#1	74	GND
75	PCI_AD14	76	PCI_AD15
77	GND	78	PCI_AD13
79	PCI_AD12	80	PCI_AD11
81	PCI_AD10	82	GND
83	GND	84	PCI_AD9
85	PCI_AD8	86	PCI_CBE#0
87	PCI_AD7	88	VCC3
89	VCC3	90	PCI_AD6
91	PCI_AD5	92	PCI_AD4
93	N/A	94	PCI_AD2
95	PCI_AD3	96	PCI_AD0
97	VCC5	98	N/A
99	PCI_AD1	100	N/A
101	GND	102	GND
103	N/A	104	GND
105	N/A	106	N/A

107	N/A	108	N/A
109	N/A	110	N/A
111	N/A	112	N/A
113	MINI_AGND	114	GND
115	N/A	116	N/A
117	N/A	118	AUDIO-GND
119	MINI_AGND	120	MINI_AGND
121	N/A	122	MINIZ01
123	MINI_VCC5A	124	+3.3VSB OR +3.3V

2.24 Connector location: LAN2

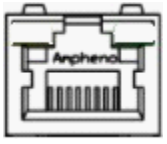
Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	MDX0+	2	MDX0-	3	MDX1+
4	MDX2+	5	MDX2-	6	MDX1-
7	MDX3+	8	MDX3-	9	LINK_LED
10	+3.3V	11	ACT_LED	12	+3.3V
13	GND	14	GND		

2.25 FAN (FAN1 , FAN2 , FAN3 , FAN4)



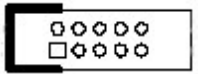
Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	GND	2	+12V	3	FAN speed sense

2.26 Connector location: LAN1



Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	RTS	2	DTR	3	TXD
4	GND	5	DCD PIN	6	RXD
7	DSR	8	CTS		

2.27 COM PORT (CN8)

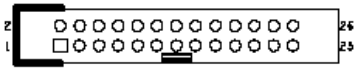


Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	DCD	2	RXD	3	TXD
4	DTR	5	GND	6	DSR
7	RTS	8	CTS	9	RING
10	NC				

2.28 Connector location: USB1

Pin NO.	Description	Pin NO.	Description	Pin NO.	Description
1	+5V	2	DATA_0-	3	DATA_0+
4	GND	5	+5V	6	DATA_1-
7	DATA_1+	8	GND		

2.29 Parallel Port Connector



2 x 13 2.0mm Box header

Pin NO.	Description	Pin NO.	Description
1	STB#	2	AFD
3	PD0	4	ERR
5	PD1	6	INIT#

7	PD2	8	SLIN
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	

2.30 CF (Compact Flash) Slot (IDE1)

A. Connector location: IDE1

B. Connector pin definition

Pin NO.	Description	Pin NO.	Description		
1	GND	2	DATA3		
3	DATA4	4	DATA5		
5	DATA6	6	DATA7		
7	CS0#	8	GND		
9	GND	10	GND		
11	GND	12	GND		
13	VCC5	14	GND		
15	GND	16	GND	Pin NO.	Description
17	GND	18	ADDRESS_2	19	ADDRESS_1
20	ADDRESS_0	21	DATA0	22	DATA1
23	DATA2	24	IOCS16# (NC)	25	CF_CD2#
26	CF_CD1#	27	DATA11	28	DATA12
29	DATA13	30	DATA14	31	DATA15
32	CS1#	33	CF_VS1# (NC)	34	IOR
35	IOW	36	VCC5	37	IRQ15
38	VCC5	39	CF_CSEL#	40	CF_VS2# (NC)
41	Reset #	42	IOCHRDY	43	PDDREQ
44	PDDACK	45	HD_LED	46	DMA66 Detect
47	DATA8	48	DATA9	49	DATA10
50	GND				

2.31 System Monitor / GPIO / PCI Routing Description

Monitor IC: W83792G

- **Voltage:**

ITEM	Pin
1.8V	33
3.3V	34
Vcore	36
5V	32
12V	31

- **Temperature:**

ITEM	Pin
Reserve for Pin header	40
On board thermistor	39
CPU temperature	38

GPIO (Super I/O: W83697UF).

INPUT	W83697UF pin name	Pin number
TIN0	GP17	121
TIN1	GP16	122
TIN2	GP15	123
TIN3	GP14	124

OUTPUT	W83697UF pin name	Pin number
TOUT0	GP13	125
TOUT1	GP12	126
TOUT2	GP11	127
TOUT3	GP10	128

PCI Routing

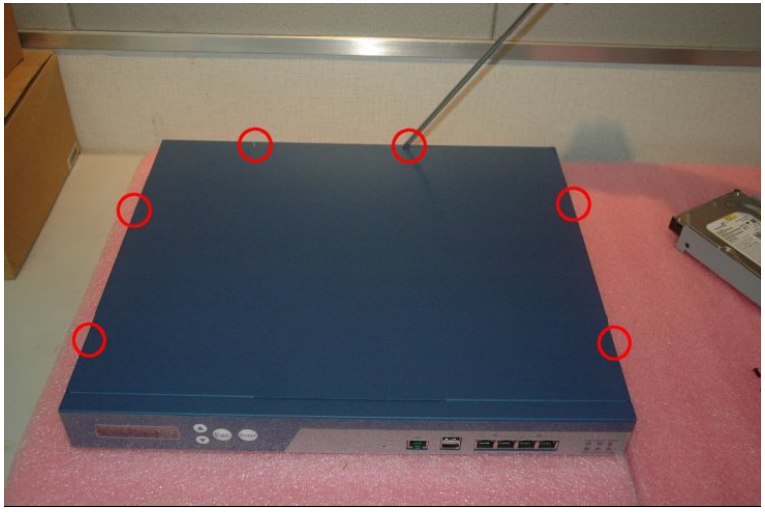
Port NO.	Chip	Function	IDSEL	INT	REQ	GNT
MINI_ PCI		Mini-PCI Connec-tor	AD19	INTA	REQ0	GNT0
LAN1	82541PI	1G Eth-ernet	AD20	INTB	REQ1	GNT1
LAN2			AD21	INTC	REQ2	GNT2
LAN3			AD22	INTD	REQ3	GNT3
LAN4			AD23	INTA	REQ4	GNT4
PCI SLOT		PCI SLOT	AD24	INTB	REQ5	GNT5

Chapter 3: Installing Modules

This chapter provides information on how to install the supported modules, including the CPU, hard disk, DIMM RAM, CompactFlash card, and PCI module

Removing the Chassis Cover

1. Remove the screws that secure the cover to the chassis.



2. Slide the cover towards the back.

3. Lift the cover and remove it from the chassis.

Installing the Hard Disk

1. Locate the hard disk drive bracket on the motherboard.

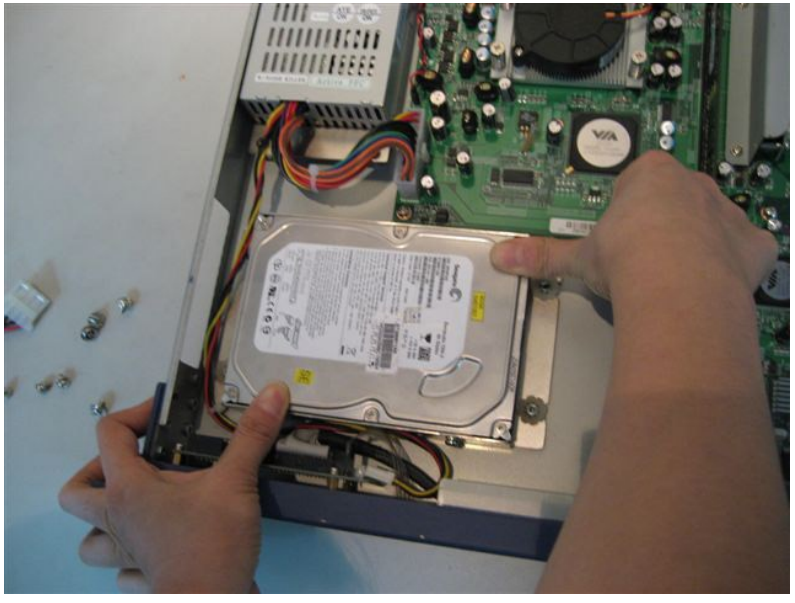
2. Remove the screws that secure the bracket to the motherboard. Set the screws aside in a safe place; you will need them later.

3. Place the bracket facing up (as shown below) on a flat surface.

4. Place your 3.5" hard disk inside the bracket.

5. Fasten the bracket onto the hard disk using the screws provided in the package.

6. Replace the bracket (with the hard disk attached) onto the mother-board.



7. Secure the bracket back onto the motherboard using the screws that you removed earlier.

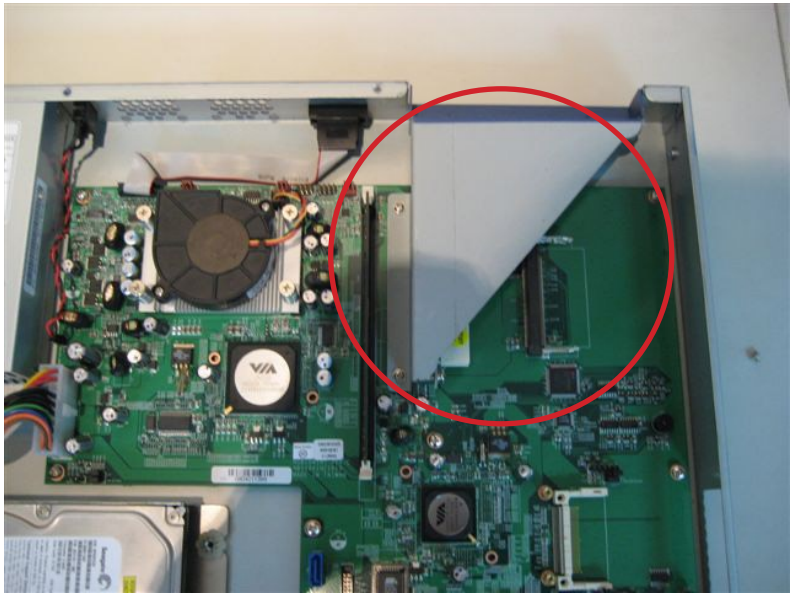
8. Take the SATA/IDE and power connectors that are included in the package, and then connect them to the corresponding slots on the motherboard.

9. Connect the other ends of the SATA/IDE connector and power connector to the corresponding slots on the rear of the hard disk.

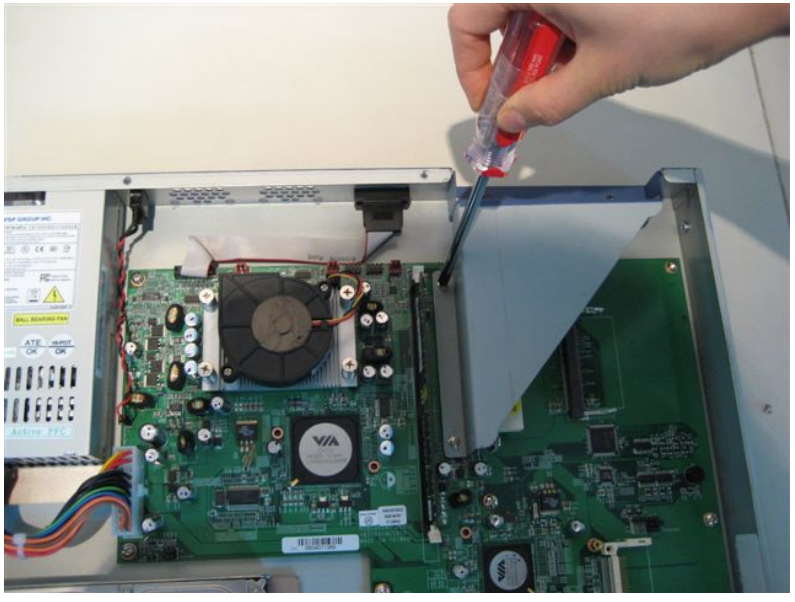
You have completed installing the hard disk.

Installing the PCI Module

1. Locate the PCI bracket on the motherboard.

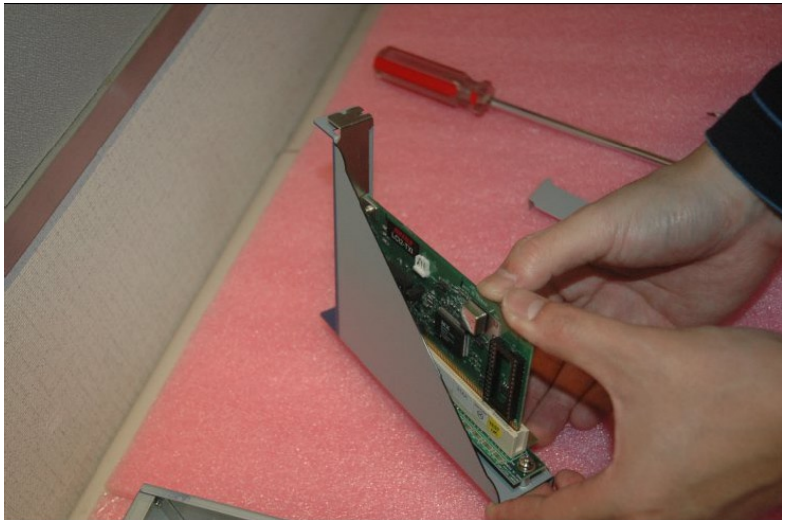


2. Remove that screws that secure the PCI bracket to the motherboard.

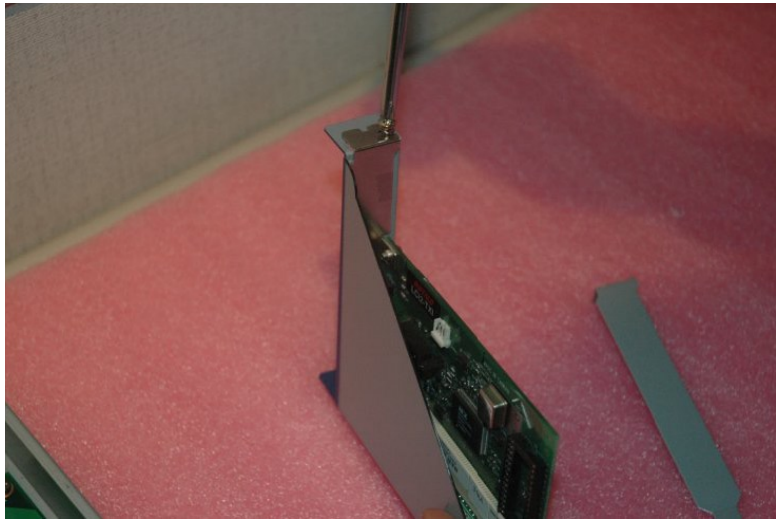


3. Remove the slot cover on the PCI bracket. Do this by removing the screw that fastens the cover to the bracket.

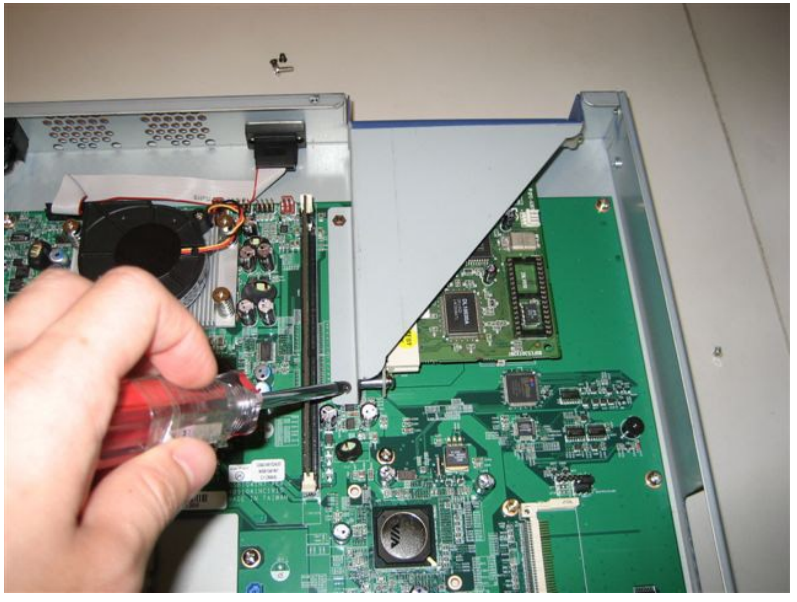
4. Insert the PCI module into the PCI slot on the bracket. Press the module firmly but gently into the slot and make sure it is seated securely.



5. Fasten the PCI module to the bracket using the screw that you removed earlier.



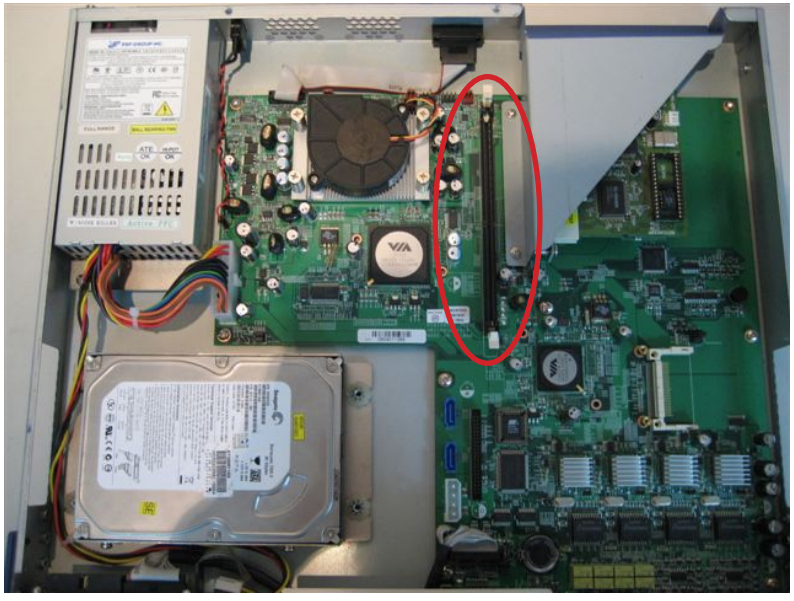
6. Replace the bracket (with the PCI module installed) onto the motherboard, and then secure it using the screws that you removed earlier.



You have completed installing the PCI module.

Installing the DIMM

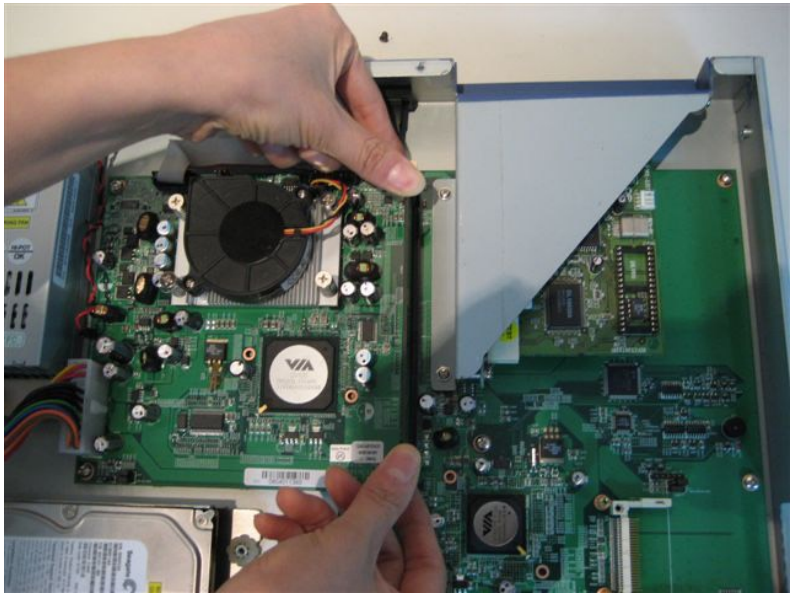
1. Locate the DIMM socket on the motherboard.



2. Make sure that the latches or retaining clips are positioned outward. This indicates that the socket is unlocked.

3. Align the DIMM into the socket so that the notch on the DIMM matches the break on the socket. Note how the module is keyed to the socket. This ensures the module can be plugged into the socket one way only.

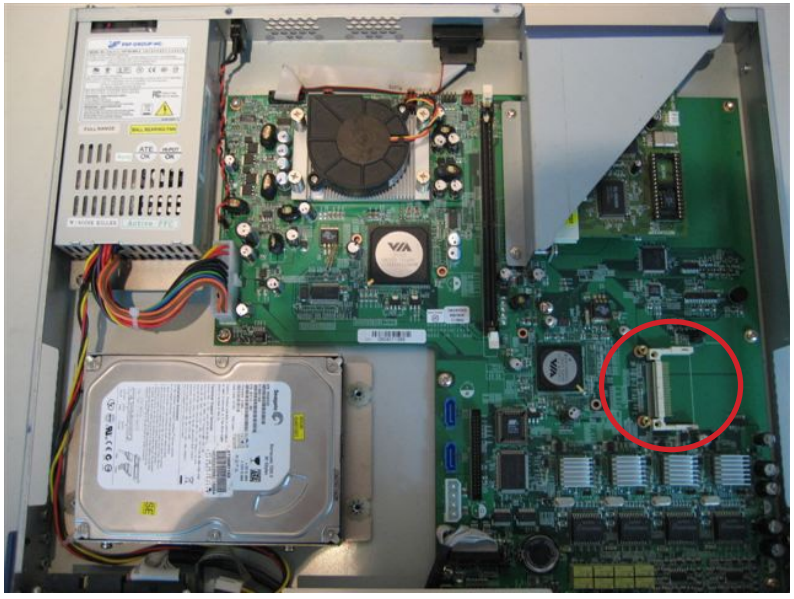
4. Firmly but gently press the DIMM into the socket until the retaining clips snap back into place and the DIMM is properly seated.



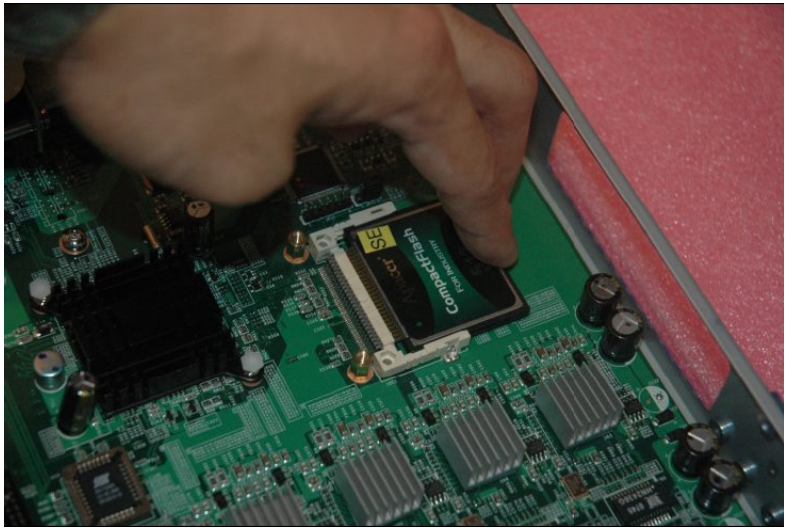
You have completed installing the DIMM.

Installing the CompactFlash Card

1. Locate the CompactFlash (CF) card slot on the motherboard.



2. Insert the CF card into the socket with the label facing up.



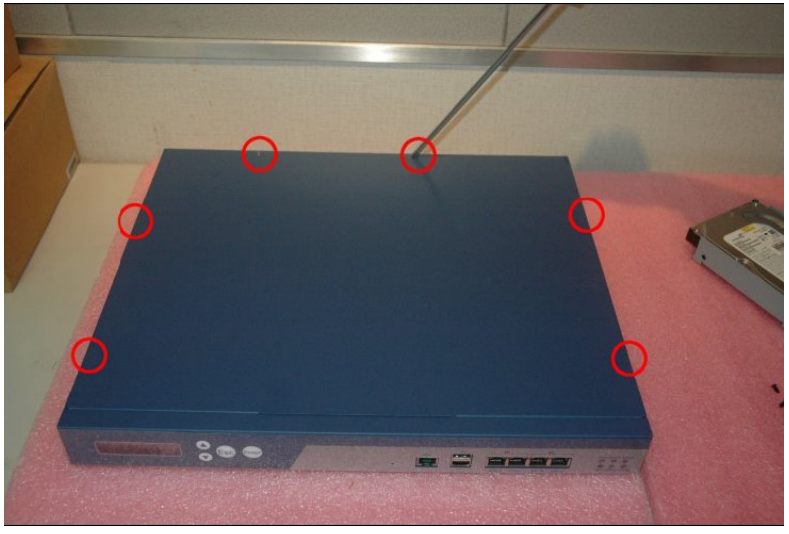
3. Firmly but gently push the CF card into the slot until it is fully seated in the slot.

You have completed installing the CF card.

Replacing the Chassis Cover

1. Replace the chassis cover.

2. Secure the chassis cover to the chassis using the six screws you removed earlier.



Rackmount bracket kit (Optional)

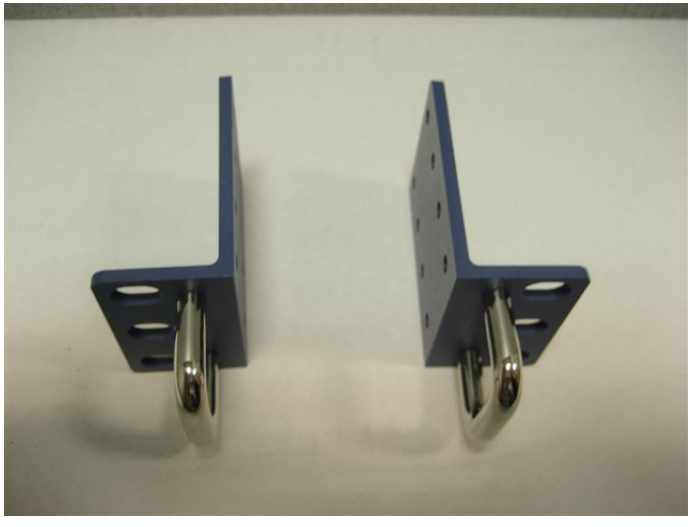
The rackmount bracket kit provides a convenient and economical way to install the server to the rack cabinet.

Attaching the long rack ears

The long rack ears are used to support the server system in a rack cabinet.

To attach the long rack ears:

1. Prepare the pair of long rack ears and set of twelve (12) screws.

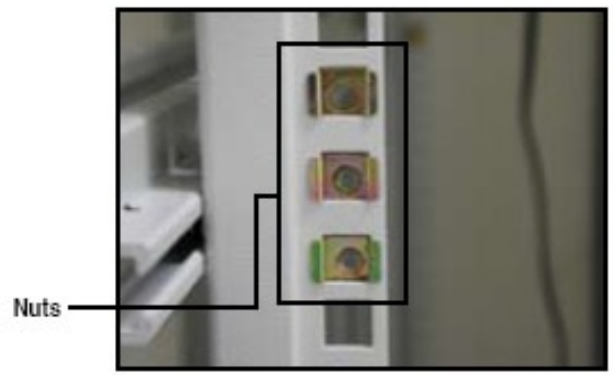


2. Locate the six screw holes on each front-side of the chassis.Select one side for installation.

3. Get one long rack ear and match the six screw holes to the screw holes on the chassis. Orient the rack ear as shown.
4. Secure the rack ear to the chassis with six screws.
5. Repeat steps 2 - 4 to attach the other rack ear.

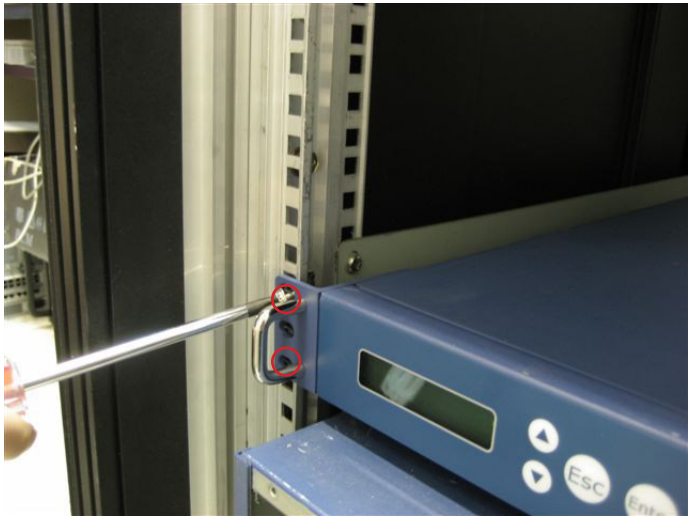
Attaching the server to the rack cabinet

1. Select one unit of space (1U) on the rack where you wish to install the server.
2. Place three (3) nuts on the front and three at the back. Do the same to the corresponding side of the rack.



3. Carefully place the server to the desired position on the rack.

4. Secure the server to the rack with two rack screws at one side. Secure the other side as well.



Chapter 4: Configuring the BIOS Settings

This chapter describes how to use the BIOS setup program for the NSA 1041N7 . The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM Web site at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the Setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

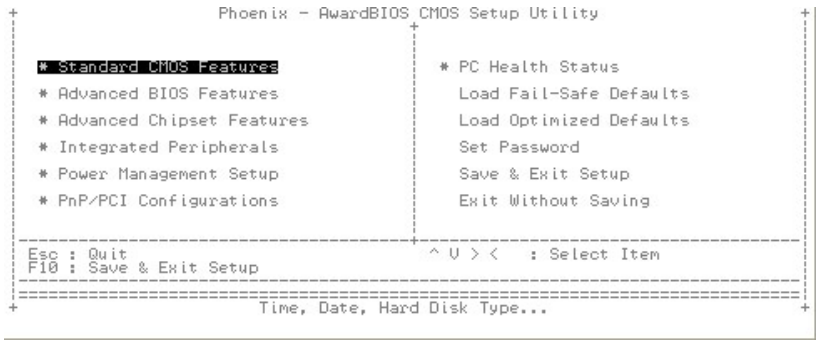
Powering on the computer and immediately pressing <Del> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

```
TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC>
Press the <Del> key to enter Setup:
```

BIOS Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu will appear on screen. The main menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

BIOS Setup Utility Main Menu



The following table lists the available options on the main menu.

Menu	Description
Standard CMOS Features	Use this menu for basic system configuration.
Advanced BIOS Features	Use this menu to set the Advanced BIOS Features available on the system.
Advanced Chipset Features	Use this menu to set the Advanced Chipset Features available on the system.
Integrated Peripherals	Use this menu to specify your settings for integrated peripherals.
Power Management Setup	Use this menu to specify your settings for power management.
PnP/PCI Configurations	Appears if your system supports Plug and Play and PCI Configuration.
PC Health Status	Displays CPU, System Temperature, Fan Speed, and System Voltages Value.
Load Fail-Safe Defaults	Displays options for enabling the fail-safe defaults.
Load Optimized Defaults	Use this menu to load the BIOS default values, that is, factory settings for optimum system performance. While Award has designed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.
Set Password	Enables you to change, set, or disable the supervisor or user password.
Save & Exit Setup	Saves CMOS value changes to CMOS and exits setup
Exit Without Saving	Ignores all CMOS value changes and exits setup.

Getting Help

The BIOS Setup program provides descriptions of the options available on the menu.

- If you are on the main menu, a description of the highlighted option can be found at the bottom of the screen.
- If you are on the Status Page or Option Page setup menu, a description of the highlighted option can be found on the right side of the screen under the heading **Item Help**.

Using the Control Keys

The table below lists the keys that help you navigate the setup program.

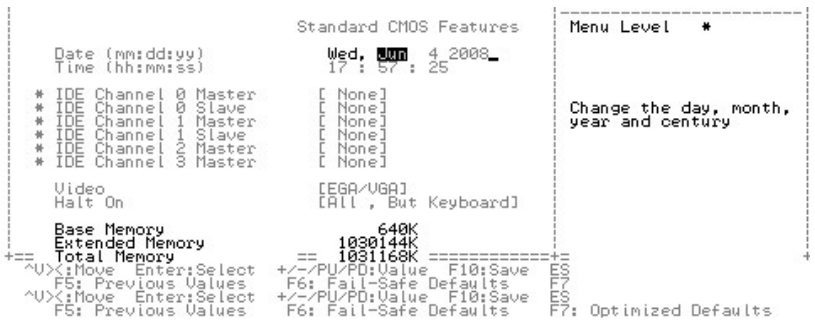
Use This Key	To Do This
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item to the left
Right arrow	Move to the item to the right
Esc key	Main Menu: Quit without saving changes to CMOS Status/Option Page Setup Menus: Exit current page and return to Main Menu.
Enter Key	Select or Accept an Item
PgUp/plus key	Increase the numeric value or make changes

PgDn/minus key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2/Shift + F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key	Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key	Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key	Load the Setup default value (only for Option Page Setup Menu)
F9 Key	Menu in BIOS
F10 key	Save all the CMOS changes (only for Main Menu)

Standard CMOS Features

Selecting Standard CMOS Features on the main program screen displays the following menu.

Standard CMOS Features Screen



Refer to the following sections for information on the options that you can configure on this screen.

Date (mm:dd:yy)

The BIOS determines the day of the week from the other data information. This field is for information only. Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss)

The time format is based on the 24-hour military time clock. For example, 1 p.m. is 13:00. Press the left or right arrow key to move to the desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

IDE Devices

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

IDE Primary/Secondary Master/Slave

If you leave this item at Auto, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items below:

- Capacity Approximate hard disk drive capacity
- Cylinder Number of cylinders
- Head Number of heads
- Precomp Write pre-compensation cylinder
- Landing Zone Landing zone
- Sector Number of sectors

Refer to your drive documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to None.

Video

Set this field to the type of graphics card installed in your system. If you are using a BGA or higher resolution card, choose the EGA/VGA option. The options are:

- EGA/VGA Enhanced Graphics Adapter/Video Graphics Array — for EGA, VGA, SEGA or PGA monitor adapters
- CGA40 Color Graphics Adapter, power up in 40 column mode
- CGA80 Color Graphics Adapter, power up in 80 column mode
- MONO Monochrome adapter, includes high resolution monochrome adapters

Halt On

During the Power-On Self-Test (POST), the computer stops if the BIOS detect a hardware error.

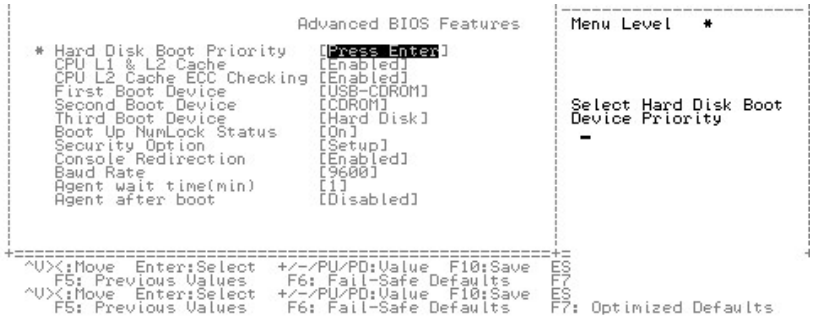
This setting determines which type of error will cause the system to halt during boot. The options are: * All Error: Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.

- No Errors: The system boot will not stop for any error that may be detected.
- All, But Keyboard: The system boot will not stop for a keyboard error, but it will stop for all others.

Advanced BIOS Features

Selecting Advanced BIOS Features on the main menu displays the following screen.

Advanced BIOS Features Screen



Refer to the following sections for information on the options that you can configure on this screen.

Hard Disk Boot Priority

Press <Enter> to enter a sub menu which shows every current hard drive installed.

Use <PageUp> or <PageDown> key to select the first boot hard disk.

CPU L1 & L2 Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). This BIOS feature is used to enable or disable the processor's Level 1 and Level 2 cache. The default and recommended setting is Enabled.

CPU L2 Cache ECC Checking

Enables or disables the ECC checking feature for CPU Level 2 Cache. The default option is Enabled.

First/Second/Third Boot Device

BIOS attempts to load the operating system from the devices in the sequence selected. The available choices are: CDROM, Hard Disk, USB-FDD, USB-ZIP, USB-CDROM, LAN, and Disabled.

Boot Up NumLock Status

Specifies whether the numerical lock (NumLock) is **On** or **Off** when the system boots up. The default option is **On**.

Security Option

Enables you to select whether the password is required every time the system boots or only when you enter Setup.

- System: The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
- Setup: The system will boot, but access to Setup will be denied if the correct password is not entered at setup.

Console Redirection

When enabled, attempt to redirect console via com port. and when disabled, attempt to redirect console when keyboard is not available.

Baud Rate

If BIOS serial console redirection is enabled, this option allows you to change the console speed. Available baud rate options include 9600 (default), 19200, 38400, 57600, and 115200.

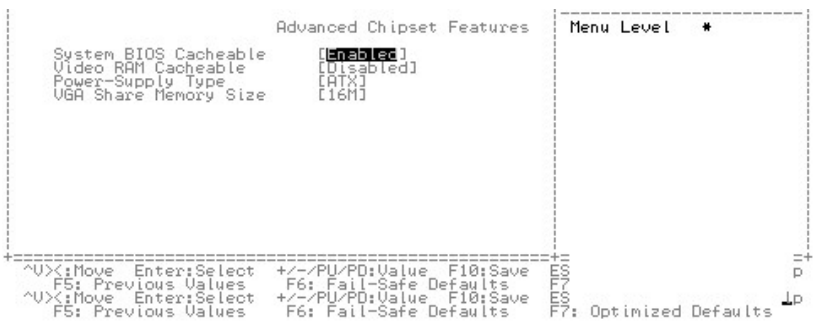
After you have made your selections in the Advanced BIOS Features setup,

press <ESC> to go back to the main screen.

Agent wait time(min)
This field specifies the Agent wait time in minutes. The default setting is 1 minute.

Agent after boot
This field specifies whether the feature "Agent after boot" is enabled or disabled when the system boots up. The default option is Disabled.

Advanced Chipset Features
Selecting Integrated Peripherals on the main menu displays the following screen.



Refer to the following sections for information on the options that you can configure on this screen.

System BIOS Cacheable
This field specifies whether or not the system BIOS would be cacheable. The default option is Enabled (i.e. the system BIOS would be cacheable).

Video RAM Cacheable
This field specifies whether or not the video RAM would be cacheable. The default option is Enabled (i.e. the video RAM would be cacheable).

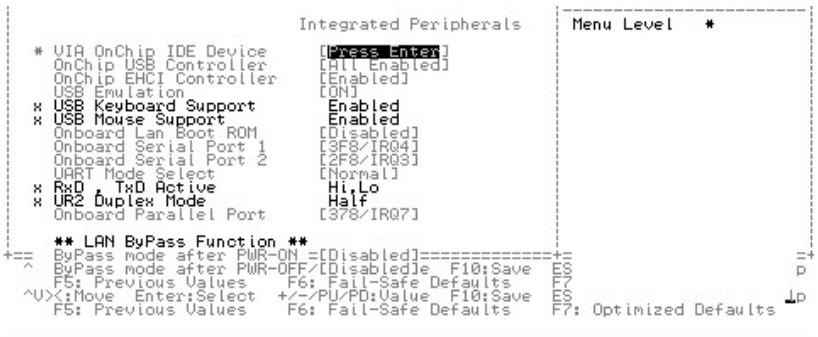
Power Supply Type
This option allows you to configure the system BIOS to manage the ATX power On and Off modes or switch between AT (default) and ATX power supplies.

VGA Share Memory Size
This field specifies the size (in MB) of shared memory for VGA display. The default setting is 16M (16 MB).

Integrated Peripherals

Selecting Integrated Peripherals on the main menu displays the following screen.

Integrated Peripherals Screen



Refer to the following sections for information on the options that you can configure on this screen.

VIA OnChip IDE Device

Select this item to set up the VIA OnChip IDE device features. Follow instructions on the screen.

OnChip USB Controller

Select this item to enable or disable all or part of the OnChip USB Controllers. Follow instructions and options on the screen. The default option is "All Enabled".

OnChip EHCI Controller

Select this item to enable or disable the OnChip USB Controllers. The default option is Enabled.

USB Emulation

Sets the USB Emulation feature **On** or **Off**. The default option is **On**.

USB Keyboard Support

Displays support status (enabled/disabled) for USB keyboard.

USB Mouse Support

Displays support status (enabled/disabled) for USB mouse.

Onboard LAN Boot ROM

Decide whether to invoke the boot ROM of the onboard LAN chip. The available choices are GbE LAN-A, GbE LAN-B and Disabled All.

Onboard Serial Port 1 / Serial Port 2

Select an address and corresponding interrupt for the first and second serial ports. The choices: Auto, 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

This feature allows you to manually select the I/O address and IRQ for the onboard serial ports. The default I/O address and IRQ settings should work well in most cases: 3F8h/IRQ4 for Serial Port 1 and 2F8h/IRQ3 for Serial Port 2. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 3F8h/IRQ4, 2F8h/IRQ3, and more.

UART Mode Select

Sets UART Mode. The default option is *Normal*.

RxD , TxD Active
Displays status of reception and transmission active status (high or low).

UR2 Duplex Mode
Displays status of UR2 Duplex Mode (half duplex or full duplex).

Onboard Parallel Port
This feature allows you to select the I/O address and IRQ for the onboard parallel port. The default I/O address of 378h and IRQ of 7 should work well in most cases. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled.

Note
NSA 1041N7 provides LAN bypass functionality to ensure that data can still pass through the device, even when it is powered off. It also provides LAN segmentation options to support virtual local area networks (VLANs). For more information, refer to Appendix A: Bypass Specifications.

Bypass mode after PWR-ON
Select the bypass behavior of the board after the device is powered on. Available options include Disabled and Enabled.

- Disabled – When the bypass function is disabled, the Bypass LED is off and all Ethernet ports are open, allowing communication between ports.
- Enabled – When the bypass function is enabled, the Bypass LED is on and the Ethernet ports are paired and each pair is isolated from each other.

Bypass mode after PWR-OFF
Select the bypass behavior of the board after the device is powered off. Available options include Disabled, Enabled, and By Segment.

- Disabled – The bypass functionality is disabled on all ports and the Bypass LED is off. Packets cannot be sent through the appliance while it is powered off.
- Enabled – The bypass functionality is enabled on all ports, and the Bypass LED is on. Packets can still be sent through the appliance even when it is powered off.
- By Segment – The bypass functionality is enabled on one segment (either Segment 1 or Segment 2). One segment consists of a pair of ports. For more information on which ports are paired when bypass is enabled, refer to Appendix A: Bypass Specifications.

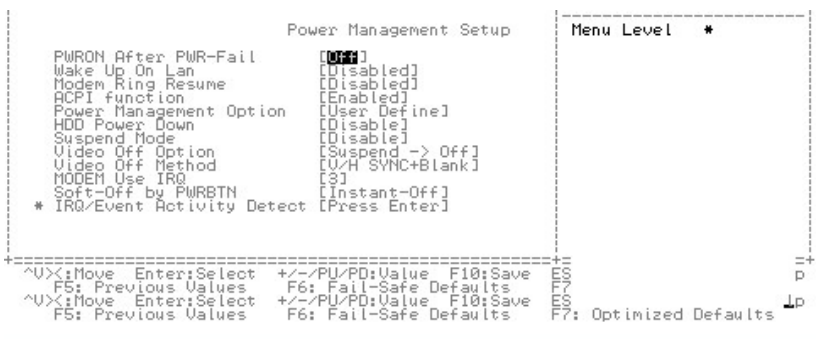
Power Management Setup

Power Management Setup lets you control the system power. The system has various power-saving modes — including powering down the hard disk, turning off the video, suspending to RAM, and software power down — that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If inactivity continues and reaches the defined timeout period, the system enters a powersaving mode. If any item in the list of Reload Global Timer Events is enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system real-time clock.

Selecting Power Management Setup on the main menu displays the following screen.



PWRON After Power-Fail

This option allows you to configure the appliance to automatically restart after a power failure (either through AC loss or power interruption). When set to On (default), the appliance will automatically start up when power is restored. When set to Off, the appliance will remain powered off even when power is restored.

Wake Up On Lan

Enables or disables the option to "wake up" the unit via LAN activities.

Modem Ring Resume

Enables or disables the option to resume the unit from idle state upon receiving modem rings.

ACPI Function

The ACPI standard (Advanced Configuration and Interface power) allows the operating system directly to check the functions of energy saving and the PnP (Plug and Play) functionality. The ACPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

Power Management Option

Configures how this unit manages power.

HDD Power Down

Enables or disables hard drive power-off option when the PC is idle for an extended period of time.

Suspend Mode
Enables or disables suspend mode – a power-off option saving the state environment so when the PC is turned on it would be returned to this saved state environment.

Video Off Option
Sets when and how to switch off video for this unit.

Video Off Method
This determines the manner in which the monitor is blanked. There are three choices:

- V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization port and write blanks to the video buffer.
- Blank Screen: This option only writes blanks to the video buffer.
- DPMS Support: Select this option if your monitor supports the Display Power Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

MODEM Use IRQ
This determines the IRQ that the MODEM can use. If the appliance has a modem, use this function to tell the BIOS which IRQ is being occupied by the modem card. When the system is in Green mode (it is compliant with the APM 1.2 specification), the modem requires an IRQ assignment to wake up the system and perform tasks. Available options include N/A (default), 3, 4, 5, 7, 9, 10, and 11.

Soft-Off by PWR-BTN
This defines the power-off mode when using an ATX power supply. The Instant Off mode allows powering off immediately upon pressing the power button. In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than four seconds. The default value is instant

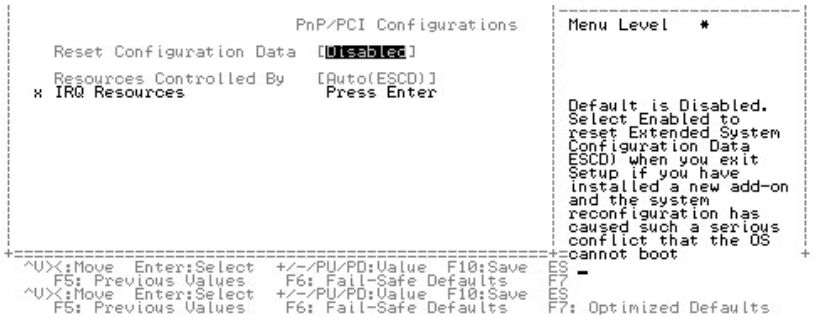
IRQ/Event Activity Detect
Detailed configurations of IRQ and event activity detections. Follow instructions on the screen.

After you have made your selections in the Power Management setup, press the <ESC> key to go back to the main program screen.

PnP/PCI Configurations

Selecting PnP/PCI Configurations on the main menu displays the following screen.

PnP/PCI Configuration Screen



Reset Configuration Data

Normally, you leave this field Disabled, Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The choices are Enabled and Disabled.

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as going into each of the submenus that follows this field. The choices are Auto (ESCD) and Manual.

After you have made your selections in the PnP/PCI Configuration setup, press the <ESC> key to go back to the main program screen.

IRQ Resources

This option allows you to assign each system interrupt a type, depending on the type of device using the interrupt. When you select IRQ Resources and press <Enter> tag, you will be directed to a submenu that will allow you to configure the system interrupts. This is only configurable when Resources Controlled By is set to Manual.

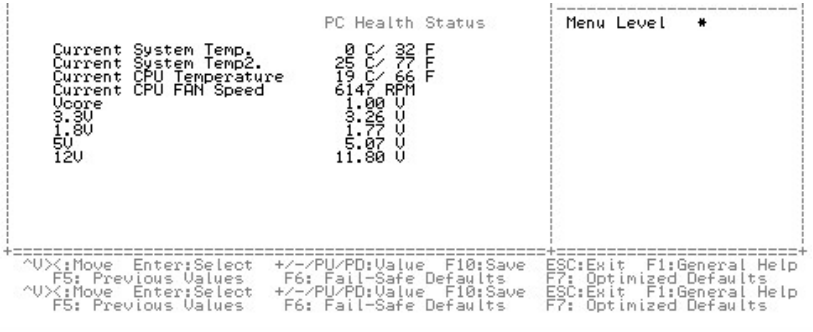
IRQ-3 assigned to PCI Device
IRQ-4 assigned to PCI Device
IRQ-5 assigned to PCI Device
IRQ-7 assigned to PCI Device
IRQ-9 assigned to PCI Device
IRQ-10 assigned to PCI Device
IRQ-11 assigned to PCI Device
IRQ-12 assigned to PCI Device
IRQ-14 assigned to PCI Device
IRQ-15 assigned to PCI Device

After you have made your selections in the PnP/PCI Configuration setup, press the <ESC> key to go back to the main program screen.

PC Health Status

If the main board supports hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds. These are the read only items.

After you have read the PC Health Status, press the <ESC> key to go back to the main program screen.

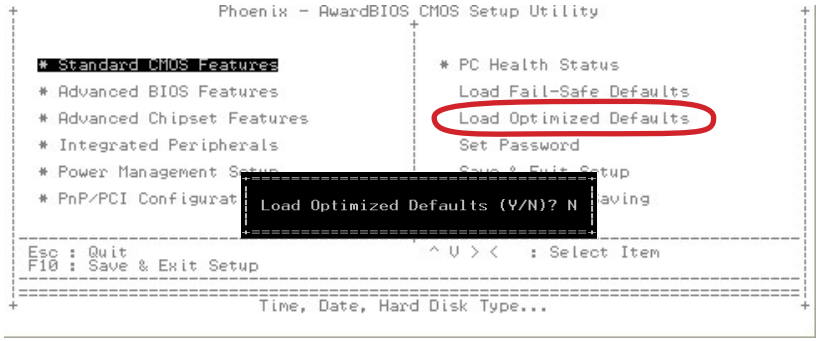


Load Fail-Safe/Optimized Defaults

This option opens a dialog box that lets you install optimized (for best performance) or fail-safe (for more reliability – especially useful for diagnosis) defaults for all appropriate items in the whole setup utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory.

You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

Load Optimized Defaults Message (similar message for Fail-Safe Defaults)



Set Password

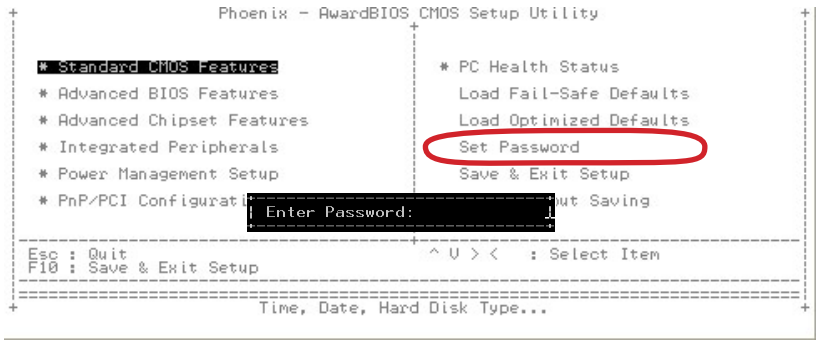
The User Password utility sets the password. The main board is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.

To disable the password dialog box appears. A message appears confirming that the password has been disabled. If you have set supervisor and user Password, only the supervisor password allows you to enter the BIOS setup program.

Note: *If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP2 to short pin 2 and pin 3 for five seconds, then*

putting the shunt back to pin 1 and pin 2 of JP2.

Set Password Screen



Exit Without Saving

Selecting this option and pressing <Enter> will exit the Setup utility without recording any new values or changing old ones.

Exit Without Saving Screen

Appendix A: Watchdog Timer

Watchdog Timer

NSB1041N7 features a watchdog timer that resets the CPU or generates an interrupt if the processor stops operating for any reason. This feature en¬sures system reliability in industrial standalone or unmanned environments.

Logical Device 8 (MIDI Port and GPIO Port 5)

CR30 (MIDI Port Default 0x00)

Bit [7:1]: Reserved.

Bit 0: 1 MIDI/GP5 port is activate

0 MIDI/GP5 port is inactive.

CR60, CR61

(Default 0x03, 0x30 if PNPCSV = 0 during POR, default 0x00 otherwise)

These two registers select the MIDI Port base address [0x100:0xFFF] on 2byte boundary.

CR62, CR63

(Default 0x00, 0x00)

These two registers select the GPIO5 base address [0x100:0xFFF] on 4byte boundary.

IO address: CRF1 base address

IO address + 1 : CRF3 base address

IO address + 2 : CRF4 base address

IO address + 3 : CRF5 base address

CR70

(Default 0x09 if PNPCSV = 0 during POR, default 0x00 otherwise)

Bit [7:4]: Reserved.

Bit [3:0]: These bits select IRQ resource for MIDI Port .

CRF0

(GP5 selection register. Default 0xFF)

When set to a '1', respective GPIO port is programmed as an input port.

When set to a '0', respective GPIO port is programmed as an output port.

CRF1

(GP5 data register. Default 0x00)

If a port is programmed to be an output port, then its respective bit can be read/written.

If a port is programmed to be an input port, then its respective bit can only be read.

CRF2

(GP5 inversion register. Default 0x00)

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in data register.

CRF3

(PLED mode register. Default 0x00)

Bit [7:3] : Reserved .

Bit 2: select WDTO count mode.

0 second

1 minute

Bit [1:0]: select PLED mode

00 Power LED pin is tri-stated.

01 Power LED pin is droved low.

10 Power LED pin is a 1Hz toggle pulse with 50 duty cycle.

11 Power LED pin is a 1/4Hz toggle pulse with 50 duty cycle.

CRF4

(Default 0x00)

Watch Dog Timer Time-out value. Writing a non-zero value to this regis¬ter causes the counter to load the value to Watch Dog Counter and start counting down. Reading this register returns current value in Watch Dog Counter instead of Watch Dog Timer Time-out value.

Bit [7:0]: = 0x00 Time-out Disable

= 0x01 Time-out occurs after 1 second/minute

= 0x02 Time-out occurs after 2 second/minutes

= 0x03 Time-out occurs after 3 second/minutes

= 0xFF Time-out occurs after 255 second/minutes

CRF5

(Default 0x00)

Bit [7] : Reserved .

Bit [6] : invert Watch Dog Timer Status

Bit 5: Force Watch Dog Timer Time-out, Write only*

1 Force Watch Dog Timer time-out event; this bit is self-clearing.

Bit 4: Watch Dog Timer Status, R/W

1 Watch Dog Timer time-out occurred.

0 Watch Dog Timer counting

Bit [3:0]: These bits select IRQ resource for Watch Dog. Setting of 2 selects SMI.

Watchdog Sample Code

```
;#############################################################
;Enable Configuration mode.
;#############################################################
out 2eh, 87h
out 2eh, 87h
;#############################################################
;Select logical device (Watch Dog).
;#############################################################
out 2eh, 07h
```

```
out 2fh, 08h
;###########################################################
;Activate Watch Dog Function.
;###########################################################
out 2eh, 30h
out 2fh, 01h
;###########################################################
; CR F3h. (select WDTO count mode; Default 00h)
;###########################################################
out 2eh, 0f3h
out 2fh, 00h ;second mode
;out 2fh 04h ;minute mode
;###########################################################
; CR F4h. (WDT Counter Register; Default 00h)
;###########################################################
out 2eh, 0f4h
out 2fh, 64h ;100 seconds/minutes
```

Appendix B: GPI/O Programming Guide

GPI/O Programming Guide

NSB1041N7 provides definitions for the four GPI/O pins in the NSB1041N7. GPI/O (General Purpose Input/Output) pins are provided for custom system design.

JP15

Pin 1	Pin 3	Pin 5	Pin 7	Pin 2	Pin 4	Pin 6	Pin 8
GPI0	GPI1	GPI2	GPI3	GPO0	GPO1	GPO2	GPO3

GPIO Sample Code

```
;Enable Configuration mode.
;############################################################
out 2eh, 87h
out 2eh, 87h
;############################################################
;Select logical device (GPIO1).
;############################################################
out 2eh, 07h
out 2fh, 07h
;############################################################
;Activate GPIO Function.
;############################################################
out 2eh, 30h
out 2fh, 01h
;############################################################
;CRF0 (GP10-GP17 I/O selection register. Default 0xFF)
;When set to a '1', respective GPIO port is programmed as an input port.
```

;When set to a '0', respective GPIO port is programmed as an output port.

;##

out 2eh, 0f0h

out 2fh, f0h ;GPIO10-13 as output pin , GPIO14-17 as input pin

;##

;CRF1 (GP10-GP17 data register. Default 0x00)

;If a port is programmed to be an output port, then its respective bit can be read/written.

;If a port is programmed to be an input port, then its respective bit can only be read.

;##

out 2eh, 0f1h

in 2fh

Appendix A: Bypass Specifications

Bypass Specifications

NSA 1041N7 provides LAN bypass functionality to ensure that data can still pass through the device, even when it is powered off. This feature helps ensure the continuous flow of data through the device in the event of a hardware failure. For network security appliances deployed at the gateway, for example, it is crucial that they provide LAN bypass functionality to ensure that hardware failure on these appliances will not bring down the entire network.

Related BIOS settings are in the Integrated Peripherals section of Chapter 4: Configuring the BIOS Settings.

Bypass Control Register Map

Bypass Function

BTCR – Bypass Timer Configuration Register = **0XF2**

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
R	X	X	X	W	W	W	W

R = read only // W = write only // R/W = read/write // X = not used

Bit 7: Timer Expired

0 – Timer has not expired

1 – Timer has expired

Bit [2:0]: Timer Value

000 – 0 second

001 – 1 second

010 – 2 second

011 – 4 second

100 – 8 second

101 – 16 second

110 – 32 second

111 – 64 second

Bypass Control Function

BCSR – Bypass Control Status Register = **0XF3**

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
W	W	X	X	R/W	R/W	R/W	R/W

R = read only // W = write only // R/W = read/write // X = not used

Bit [7:6]: Bypass Mode

00 – Ignore, no action taken

01 – Force enable

10 – Force disable

11 – Timer enable

Bit [3:0]: Segment Control Bit

Power OFF state Bypass Control Function

Power Off state Bypass Configuration Register = **0XF7**

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X	X	X	X	W	W	W	W

R = read only // W = write only // R/W = read/write // X = not used

Bit 0 : Segment 1

(1st Bypass segment fron the left as seen from the front panel)

Bit 1 : Segment 2

(2nd Bypass segment fron the left as seen from the front panel)

Bit 2 : Segment 3

(3rd Bypass segment fron the left as seen from the front panel)

Bit 3 : Segment 4

(4th Bypass segment fron the left as seen from the front panel)

0 = Set segment bypass Disable when power off

1 = Set segment bypass Enable when power off

Bypass Function Sample Code

```
;############################################################
Bypass Function Enable
;############################################################
Out F3 41
;############################################################
Bypass Function Disable
;############################################
Out F3 81
;############################################################
Bypass Timer Function
;############################################
Out F3 f1
Out F2 Sec
;############################################################
```

Power OFF state Bypass Control Function

;##

Out F7 0 ; Bypass Disable When Power off

Out F7 1 ; Bypass Enable When Power off