NEXCOM International Co., Ltd.

Network and Communication Solutions

Network Security Appliance

DNA 1150

User Manual

NEXCOM International Co., Ltd.
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Preface

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Acknowledgements

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Regulatory Compliance Statements

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

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class B 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

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.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

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NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

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.

Cautions

Electrostatic discharge (ESD) can damage system 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 rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

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 grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

Global Service Contact Information

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Package Contents

Before continuing, verify that the DNA 1150 package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Name	Description	Qty
1	50311F0107X00	(H)I Head Bolts Screw Long FEI:I M3x14ISO	I3x14 AXISx10mm Screw x4mm(BLACK)	4
2	50311F0381X00	Round Head Screw Long FEI:P1.6x5L NI	P1.6x5L NI	4
3	5044440031X00	Rubber Foot Kang Yang:RF20-5-4P	19.8x18x5.0mm	4
4	5060100012X00	High-End Damper Inside DIA. KITAGAWA:HED-1111-ALS20ABK	11.1mm H:10.8mm TPS(BLACK)	4
5	6012200052X00	PE Zipper Bag #8	170x240mm, w/China RoHS Symbol	1
6	6012200053X00	PE Zipper Bag #3	100x70mm, w/China RoHS Symbol	1
7	6023309081X00	Cable EDI:232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1
8	60233AT123X00	SATA Cable ST:MD-6102043	SATA 7P 180D(Lock) to 7P 180D(Lock) L=70mm	1
9	60233PW197X00	SATA Power Cable BEST:900-0415-070R	Female Connector 15P to Housing 4P PIT: 2.54mm L:70mm	1
10	602DCD0758X00	(E)DNA 1150 CD Driver VER:1.0	JCL	1
11	7400040002X00	Power Adapter FSP: FSP040-DGAA1(N09001)	40W 12V/ 3.33A for NXG50	1
12	19L00115000X0	ASSY DNA 1150		1

Ordering Information

The following below provides ordering information for DNA 1150.

Barebone

DNA 1150 (P/N: 10L00115000X0)

Intel® Atom™ Processor C2358, 2 Cores 1.7G, BGA type, 2 DDR3 memory slots, 6 copper LAN ports, MO-297 socket, USB ports, VGA port, Mini PCIe slot

Chapter 1: Product Introduction

Overview

Key Features

- Intel® Atom™ processor C2358, 2 Cores/1.7G with Quick Assist, BGA type
- DDR3 1333MHz Long-DIMM sockets, up to 16GB ECC or non-ECC SDRAM
- Support 6 PCIe GbE LAN ports
- Support one mini PCIe x1 slot
- Internal one 2.5" HDD Bay
- Two pairs dual latch bypass

Hardware Specifications

Main Board

- DNB 1150
- Intel® Atom™ processor C2358, BGA type
- 2 Cores/ 1.7G

Main Memory

- 2x 240-pin DDR3 1333MHz DIMM sockets, up to 16GB ECC or non-ECC SDRAM

LAN Features

- 2x LAN Chip : Intel® i210
- MARVELL PHY 88E1543
- Support 10/100/1000 link speed
- LAN Bypass: 2 pairs
- 6x copper ports

Expansion

- 1x Mini-PCIe slot

I/O Interface-Front

- Power status/ HDD status/ LAN status

I/O Interface-Rear

- 2x USB 2.0 ports
- 1x RJ45 type console port
- 6x copper ports
- 1x VGA port
- 1x Power Button

Devices

- 1x On-board MO-297 socket
- 1x Internal 2.5” HDD Bay

Power Input

- 40W power adapter

Dimensions

- Chassis Dimension: 272mm x 194.7mm x 44mm
- Carton Dimension: 420mm x 290mm x 147mm

Weight

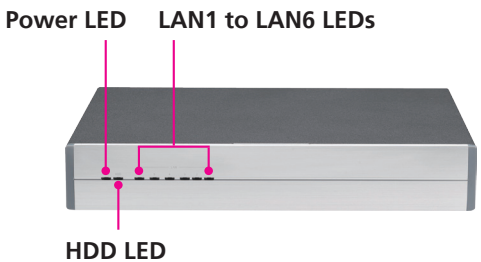
- Without Packing: 2.5Kg
- With Packing: 5Kg

Certifications

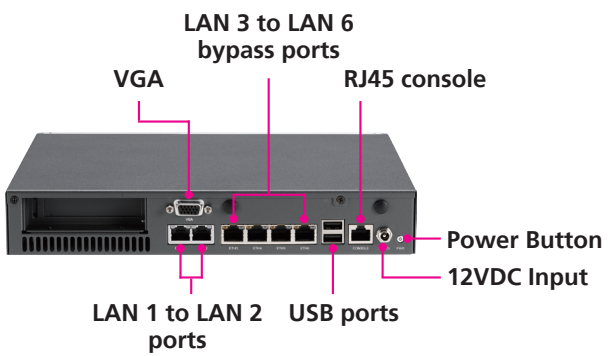
- CF
- FCC
- UL

Knowing Your DNA 1150

Front Panel



Rear Panel



Power LED
Indicates the power status of the system.

HDD LED
Indicates the hard drive activity.

LAN 1 to LAN 6 LEDs
Indicates the network activity of LAN 1 to LAN 6 ports.

VGA
Used to connect an analog VGA monitor.

LAN 1 (ETH1) to LAN 2 (ETH2) Ports
Used to connect network devices.

LAN 3 (ETH3) to LAN 6 (ETH6) Bypass Ports
Used to connect network devices, with LAN bypass on ETH3 and ETH4 (Segment 1) and on ETH5 and ETH6 (Segment 2).

USB Ports
Used to connect USB 2.0/1.1 devices.

RJ45 Console Port
Used to connect RJ45 type console port.

12VDC Input
Used to plug a DC power cord.

Power Button
Press to power-on or power-off the system.

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the DNA 1150 motherboard.

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 environments 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 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:

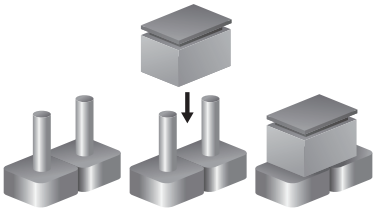
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards 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

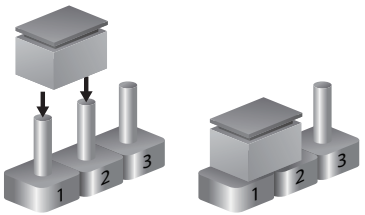
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

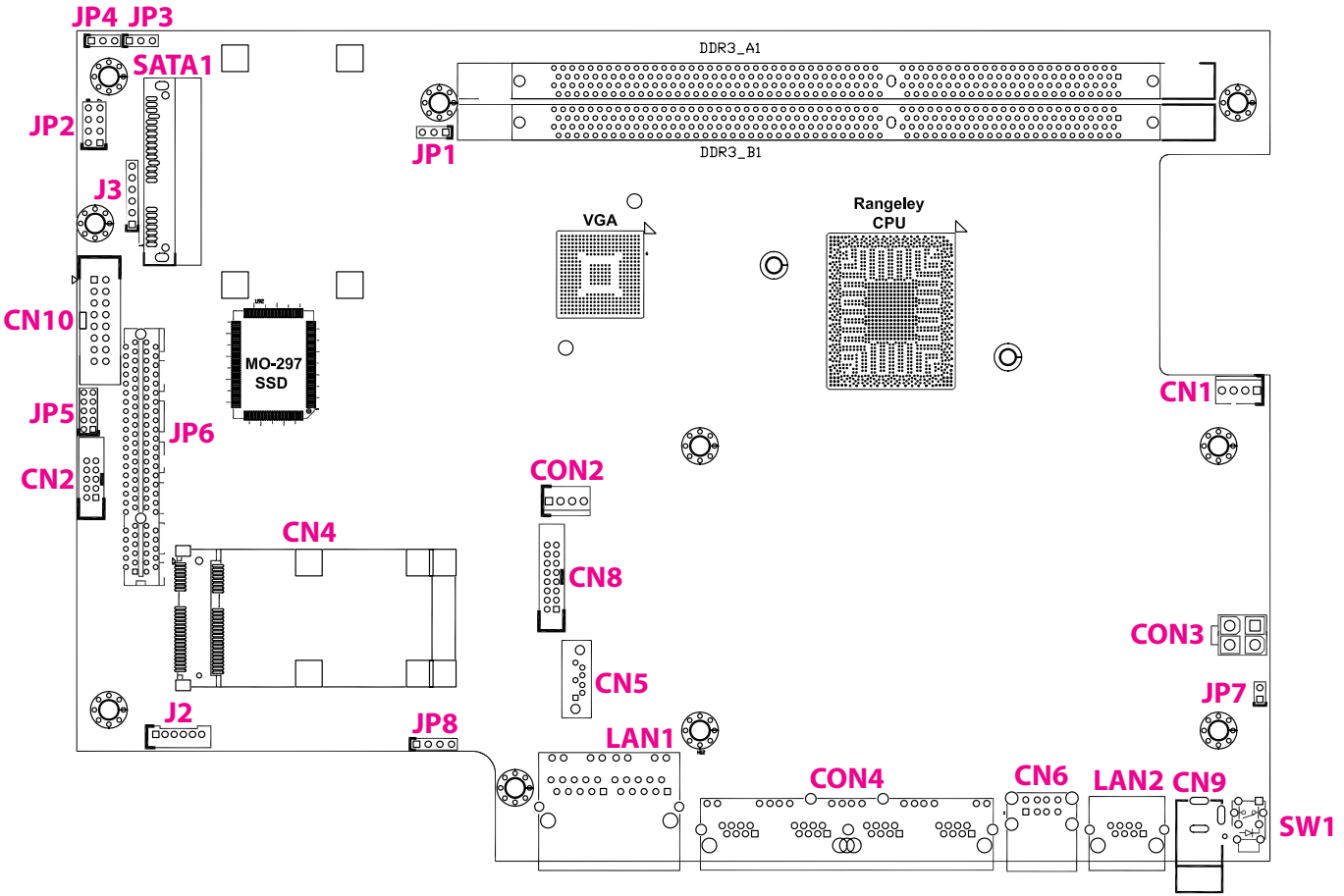


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors.



Jumpers

CMOS Clear Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP1

Pin	Function
1-2	Normal
2-3	Clear CMOS

Pin	Definition
1	NC
2	RTEST_AVN_N
3	GND

ATX/AT Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP4

Pin	Function
1-2	ATX mode
2-3	AT mode

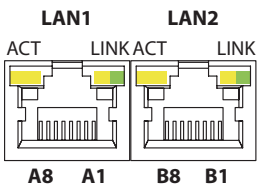
Pin	Definition
1	GND
2	GND
3	AT_ATX_SEL

Connector Pin Definitions

External Connectors

LAN 1 and LAN 2 Ports (ETH1 and ETH2)

Connector type: RJ45 with LEDs
Connector location: LAN1



Act	Status
Flashing Yellow	Data activity
Off	No activity

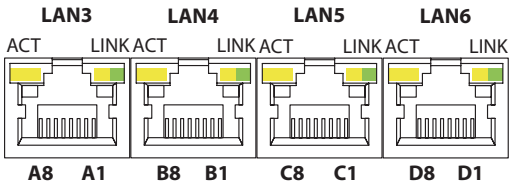
Link	Status
Steady Green	1G network link
Steady Yellow	100Mbps network link
Off	No link

Pin	Definition	Pin	Definition
A1	LAN5_TX0P	A2	LAN5_TX0N
A3	LAN5_TX1P	A4	LAN5_TX1N
A5	LAN5_T_VCC	A6	GND
A7	LAN5_TX2P	A8	LAN5_TX2N
A9	LAN5_TX3P	A10	LAN5_TX3N
A11	LED_LAN5_1G#	A12	LED_LAN5_100M#
A13	LED_LAN5_LINK#_ACT_V	A14	LED_LAN5_LINK#_ACT

Pin	Definition	Pin	Definition
B1	LAN6_TX0P	B2	LAN6_TX0N
B3	LAN6_TX1P	B4	LAN6_TX1N
B5	LAN6_T_VCC	B6	GND
B7	LAN6_TX2P	B8	LAN6_TX2N
B9	LAN6_TX3P	B10	LAN6_TX3N
B11	LED_LAN6_1G#	B12	LED_LAN6_100M#
B13	LED_LAN6_LINK#_ACT_V	B14	LED_LAN6_LINK#_ACT

LAN 3 to LAN 6 Ports (ETH3 to ETH6)

(Segment 1 Bypass Ports: ETH3 and ETH4)
(Segment 2 Bypass Ports: ETH5 and ETH6)
Connector type: RJ45 with LEDs
Connector location: CON4



Act	Status
Flashing Yellow	Data activity
Off	No activity

Link	Status
Steady Green	1G network link
Steady Yellow	100Mbps network link
Off	No link

Pin	Definition	Pin	Definition
A1	LAN1_TXP0_CON	A2	LAN1_TXN0_CON
A3	LAN1_TXP1_CON	A4	LAN1_TXP2_CON
A5	LAN1_TXN2_CON	A6	LAN1_TXN1_CON
A7	LAN1_TXP3_CON	A8	LAN1_TXN3_CON
A9	STATUS0_LAN1	A10	10_100_LED_LAN1
A11	LOS_OUT_LAN1	A12	LOS_OUT_LAN1_R

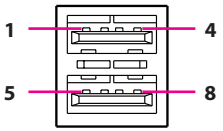
Pin	Definition	Pin	Definition
B1	LAN2_TXP0_CON	B2	LAN2_TXN0_CON
B3	LAN2_TXP1_CON	B4	LAN2_TXP2_CON
B5	LAN2_TXN2_CON	B6	LAN2_TXN1_CON
B7	LAN2_TXP3_CON	B8	LAN2_TXN3_CON
B9	STATUS0_LAN2	B10	10_100_LED_LAN2
B11	LOS_OUT_LAN2	B12	LOS_OUT_LAN2_R

Pin	Definition	Pin	Definition
C1	LAN3_TXP0_CON	C2	LAN3_TXN0_CON
C3	LAN3_TXP1_CON	C4	LAN3_TXP2_CON
C5	LAN3_TXN2_CON	C6	LAN3_TXN1_CON
C7	LAN3_TXP3_CON	C8	LAN3_TXN3_CON
C9	STATUS0_LAN3	C10	10_100_LED_LAN3
C11	LOS_OUT_LAN3	C12	LOS_OUT_LAN3_R

Pin	Definition	Pin	Definition
D1	LAN4_TXP0_CON	D2	LAN4_TXN0_CON
D3	LAN4_TXP1_CON	D4	LAN4_TXP2_CON
D5	LAN4_TXN2_CON	D6	LAN4_TXN1_CON
D7	LAN4_TXP3_CON	D8	LAN4_TXN3_CON
D9	STATUS0_LAN4	D10	10_100_LED_LAN4
D11	LOS_OUT_LAN4	D12	LOS_OUT_LAN4_R

USB Ports

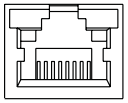
Connector type: Dual USB 2.0 ports
Connector location: CN6



Pin	Definition	Pin	Definition
1	VCC	2	USB0-
3	USB0+	4	GND
5	VCC	6	USB1-
7	USB1+	8	GND

RJ45 Console Port (RS232)

Connector type: RJ45 port
Connector location: LAN2



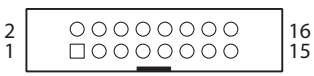
Pin	Definition	Pin	Definition
1	NC	2	NC
3	SP_TXD	4	COM1_GND
5	NC	6	SP_RXD
7	NC	8	NC

Connector Pin Definitions

Internal Connectors

VGA Port

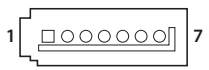
Connector type: 2x8 16-pin header, 2.0mm pitch
Connector location: CN8



Pin	Definition	Pin	Definition
1	VGA_R_CON	2	VGA_G_CON
3	VGA_B_CON	4	NC
5	GND	6	GND
7	GND	8	GND
9	VGA_VCC	10	GND
11	NC	12	VGA_I2CDAT_CON
13	VGA_HSYNC_CON	14	VGA_VSYNC_CON
15	VGA_I2CCLK_CON	16	NC

SATAIII Port

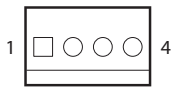
Connector type: Standard Serial ATAIII, 1.27mm pitch
Connector location: CN5



Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP0_
3	SATA_TXN0	4	GND
5	SATA_RXN0	6	SATA_RXP0
7	GND		

Desktop SATA Power Connector

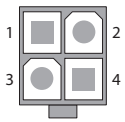
Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: CON2



Pin	Definition
1	VCC12
2	GND
3	GND
4	VCC5

ATX 12V Power Connector

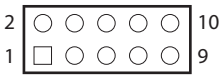
Connector type: 2x2 4-pin header
Connector location: CON3



Pin	Definition
1	GND
2	GND
3	V12S
4	V12S

Digital Input/Output (4 Input/Output)

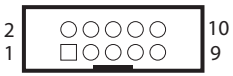
Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: JP5



Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	SIO_GPIN1	4	SIO_GPOUT1
5	SIO_GPIN2	6	SIO_GPOUT2
7	SIO_GPIN3	8	SIO_GPOUT3
9	SIO_GPIN4	10	SIO_GPOUT4

COM 2 from SIO

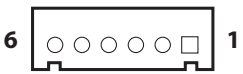
Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: CN2



Pin	Definition	Pin	Definition
1	SIO_DCDA#_COM1	2	SIO_RXD_COM1
3	SIO_TXD_COM1	4	SIO_DTRA#_COM1
5	COM1_GND	6	SIO_DSRA#_COM1
7	SIO_RTSA#_COM1	8	SIO_CTSA#_COM1
9	SIO_RIA#_COM1	10	COM1_GND

USB JST Port

Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J2



Pin	Definition	Pin	Definition
1	VCC	2	USB2-
3	USB2+	4	USB3-
5	USB3+	6	GND

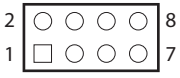
Reset Button

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: JP7

Pin	Definition
1	RST_BTN_CAL_N
2	GND

Keyboard/Mouse Connector

Connector type: 2x4 8-pin header, 2.54mm pitch
Connector location: JP2



Pin	Definition	Pin	Definition
1	VCC5	2	VCC5
3	KDAT	4	MDAT
5	KCLK	6	MCLK
7	GND	8	GND

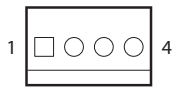
GAL Programming Connector

Connector type: 1x6 6-pin header, 2.54mm pitch
Connector location: J3

Pin	Definition	Pin	Definition
1	3VSB	2	GND
3	GAL1_TCK	4	GAL1_TDO
5	GAL1_TDI	6	GAL1_TMS

System Fan Connector

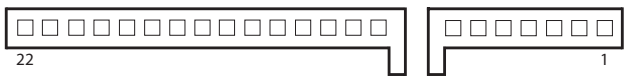
Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: CN1



Pin	Definition
1	GND
2	VCC12
3	FAN1
4	FANPWM1_R

MO-297 SSD Connector

Connector type: MO-297
Connector location: SATA1



Pin	Definition	Pin	Definition
1	GND	2	SATA6G_TXP_1
3	SATA6G_TXN_1	4	GND
5	SATA6G_RXN_1_N	6	SATA6G_RXP_1_N
7	GND	8	SATA_SSD_3V3
9	SATA_SSD_3V3	10	SATA_SSD_3V3
11	GND	12	GND
13	GND	14	SATA_SSD_5V
15	SATA_SSD_5V	16	SATA_SSD_5V
17	GND	18	NC
19	GND	20	SATA_SSD_12V
21	SATA_SSD_12V	22	SATA_SSD_12V

Power Programming Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP3

Pin	Definition
1	GND
2	SIO_SMB_DATA_MAIN
3	SIO_SMB_CLK_MAIN

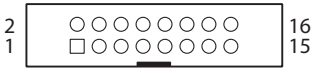
Keypad

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: JP3

Pin	Definition
1	KEY_PIN1
2	KEY_PIN2
3	KEY_PIN3
4	KEY_PIN4

Parallel Interface for LCM Module

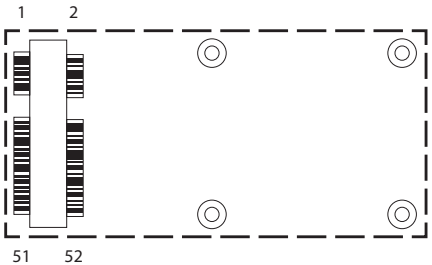
Connector type: 2x8 16-pin header, 2.54mm pitch
Connector location: CN10



Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	LPT_SLIN#R	4	LPT_RES
5	LPT_AFD#R	6	LPT_INIT#R
7	LPT_PDR1	8	LPT_PDR0
9	LPT_PDR3	10	LPT_PDR2
11	LPT_PDR5	12	LPT_PDR4
13	LPT_PDR7	14	LPT_PDR6
15	LPT_PW	16	VCC5

Mini-PCIe Connector

Connector location: CN4



Pin	Definition	Pin	Definition
1	WAKE#	2	VCC3_3
3	NC	4	GND
5	NC	6	VCC1_5
7	CLKREQ#	8	NC
9	GND	10	NC
11	REFCLK-	12	NC
13	REFCLK+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	VCC3_3
25	PERp0	26	GND

Pin	Definition	Pin	Definition
27	GND	28	VCC1_5
29	GND	30	SMBCLK
31	PETn0	32	SMBDAT
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	VCC3_3	40	GND
41	VCC3_3	42	NC
43	GND	44	LED_WLAN1#
45	NC	46	NC
47	NC	48	VCC1_5
49	NC	50	GND
51	NC	52	VCC3_3

Chapter 3: System Setup

Removing the Chassis Cover

Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

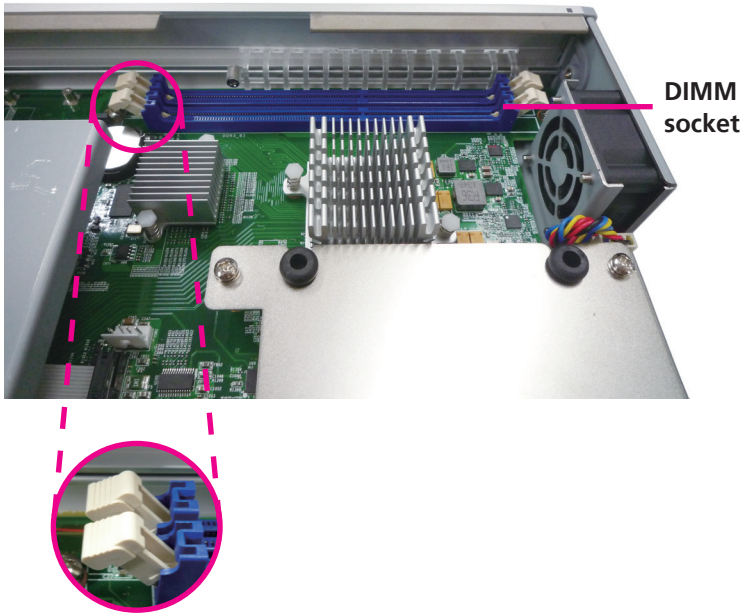
Screws on the sides

1. The screws around the cover are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.

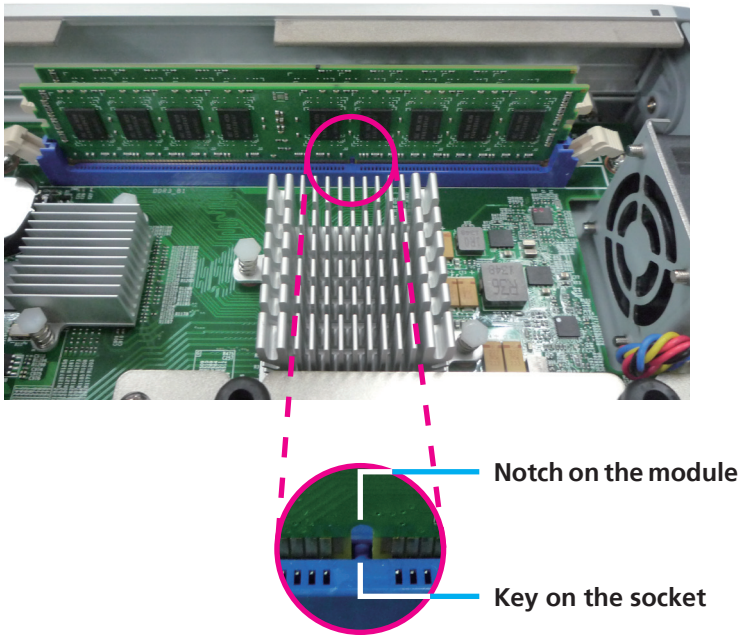
2. Gently slide the cover outwards, then lift up the cover to remove it.

Installing DIMM Memory Modules

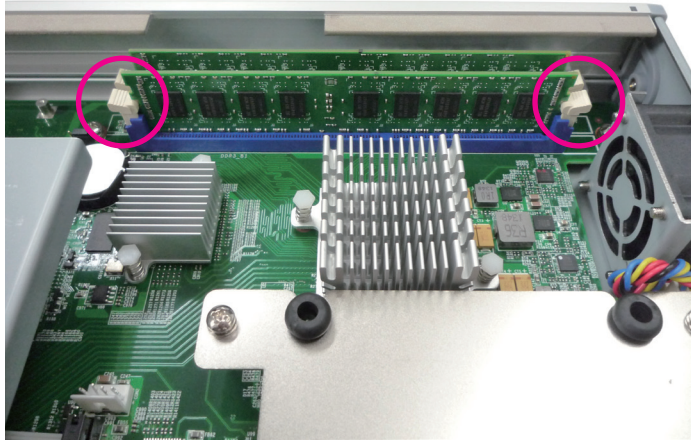
1. Push the ejector tabs which are at the ends of the socket outward. This indicates that the socket is unlocked.



2. Note how the module is keyed to the socket. Grasping the module by its edges, align the module with the socket so that the "notch" on the module is aligned with the "key" on the socket. The key ensures the module can be plugged into the socket in only one direction.

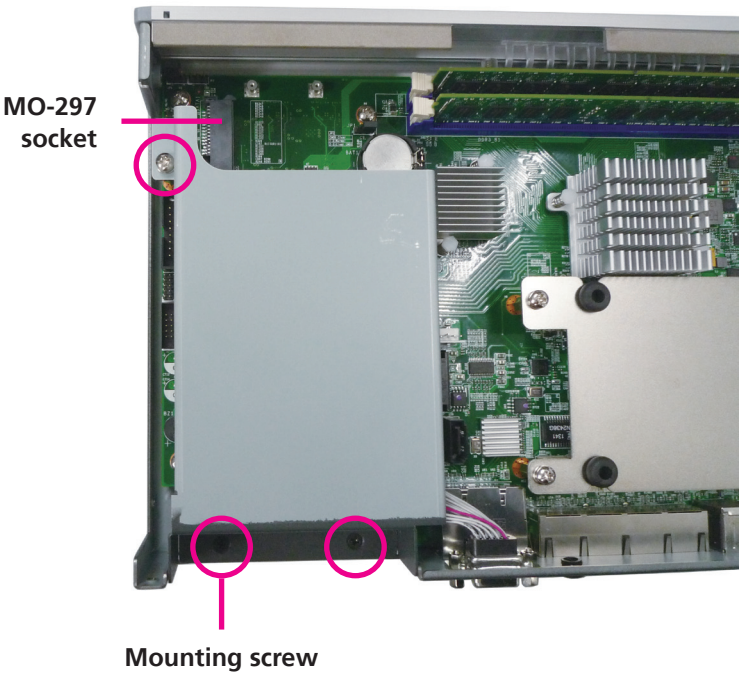


3. Seat the module vertically, pressing it down firmly until it is completely seated in the socket. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.



Installing a MO-297 SSD Module

1. Remove the L-shaped bracket by removing the mounting screws that secure it. The MO-297 socket is beneath the L-shaped bracket.



2. With the bracket removed, position the module to the socket.

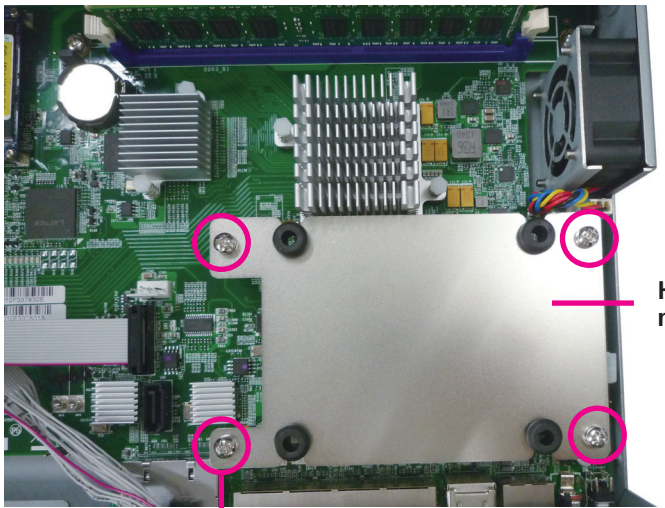
3. Insert the module until it is completely seated in the socket, and tighten screws into the mounting holes to secure the module.

Mounting screw

Installing a 2.5" SATA Hard Drive

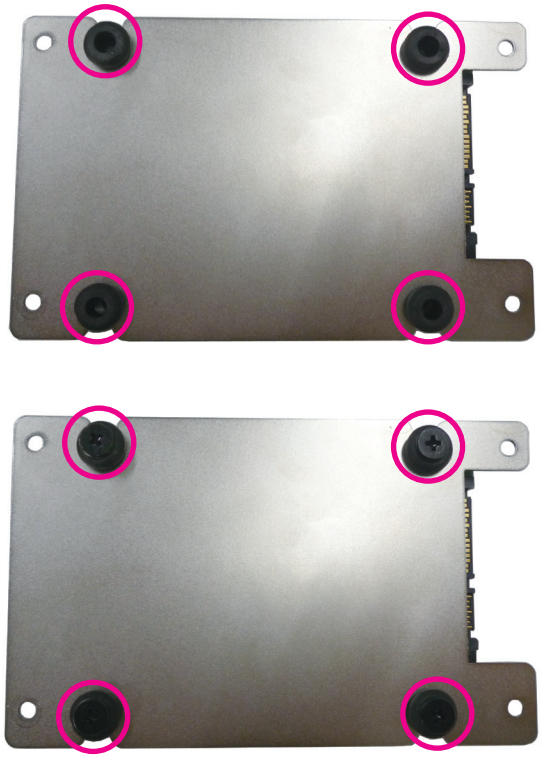
Please correctly follow the below instructions and noted items to avoid making unnecessary damages.

1. Remove the screws on the hard drive mount.

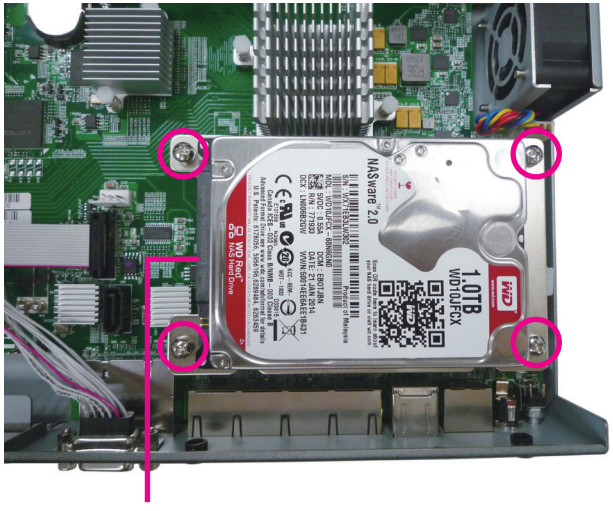


2. Place the SATA hard drive onto the hard drive mount with the SATA data and power connector facing outwards.

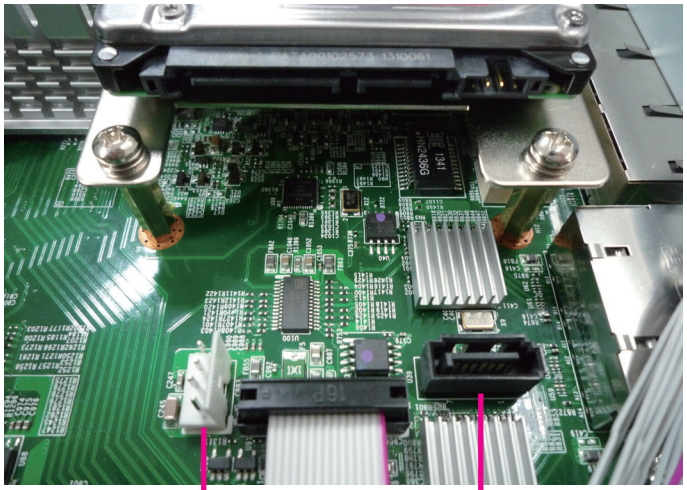
3. On the other side, align the mounting holes on the hard drive mount to the mounting holes on the hard drive. Use the provided mounting screws to secure the hard drive in place.



4. Place the hard drive mount back in the chassis with the connector side facing the board, and then use the mounting screws to secure the drive bay in place.

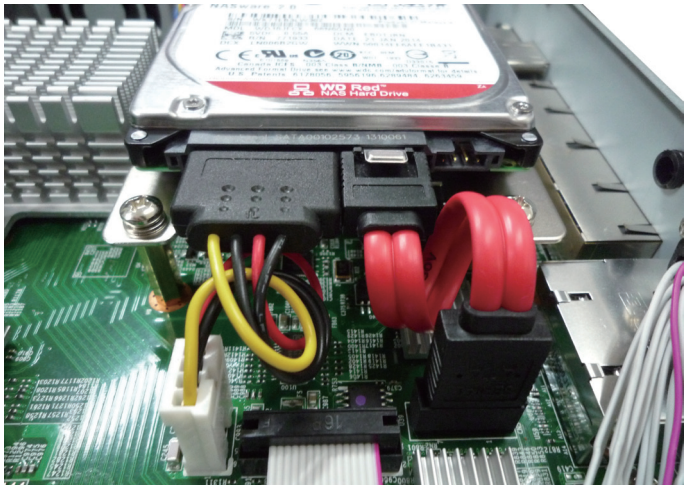


5. Locate the SATA data and power connector on the board.



SATA power connector SATA data connector

6. Connect the SATA data and power cable onto the board and other ends to the hard drive.



Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the DNA 1150. 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.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

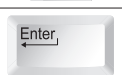
When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- 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 

allows you to enter Setup.

Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menu or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press 

.

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Access Level

Displays the access level of the current user in the BIOS.

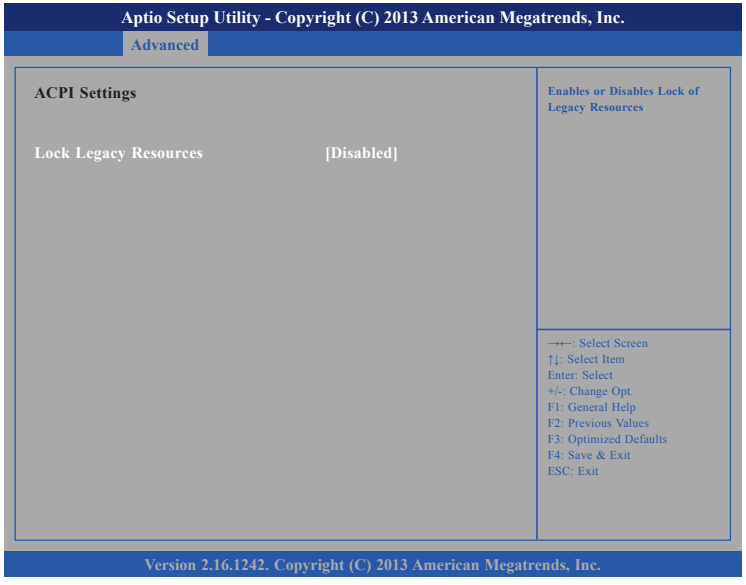
Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.

ACPI Settings

This section is used to configure ACPI Settings.

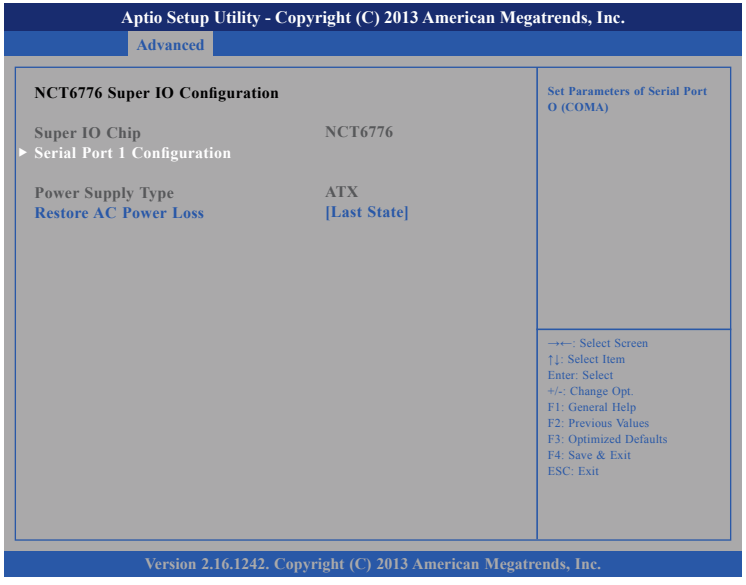


Lock Legacy Resources

Enables or disables system ability to prevent the operating system from modifying assignments for legacy resources (serial, parallel, and PS/2 ports).

Super IO Configuration

This section is used to configure the serial ports.



Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 1 Configuration

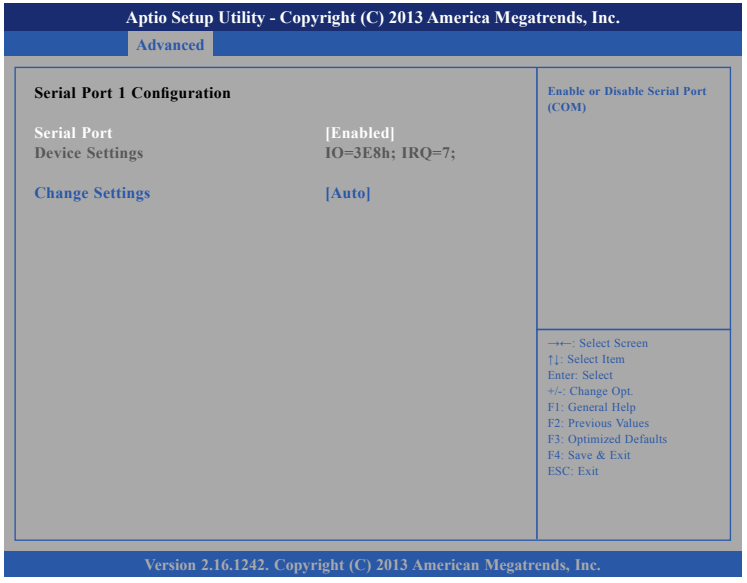
Configures the IO/IRQ settings of serial port 1.

Restore AC Power Loss

Select AC power state when power is re-applied after a power failure.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

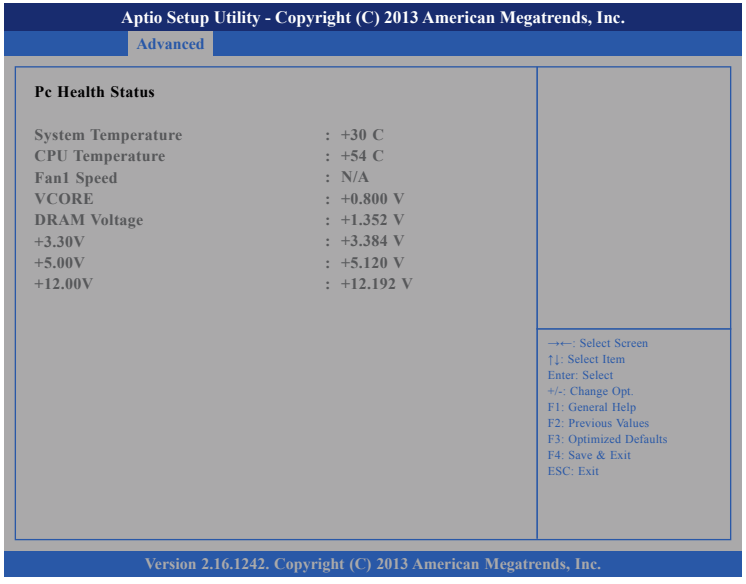
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

H/W Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



System Temperature
Detects and displays the current system temperature.

CPU Temperature
Detects and displays the current CPU temperature.

Fan1
Detects and displays the fan speed of Fan1.

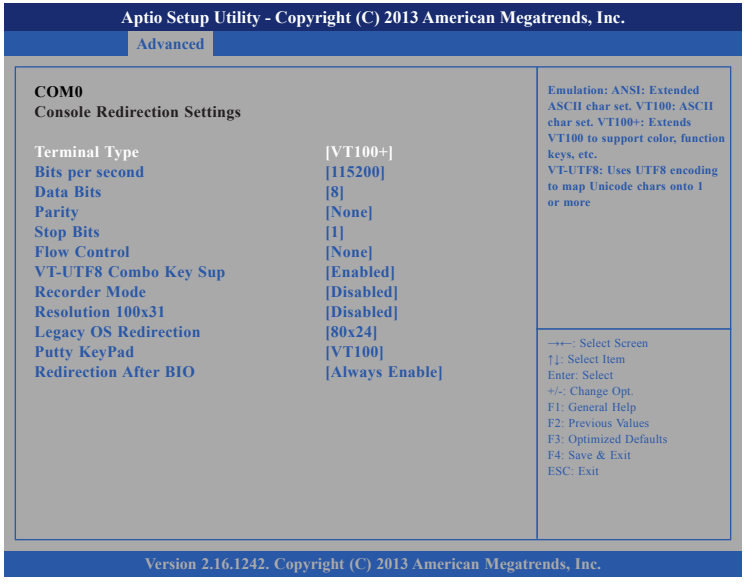
VCORE to +12.00V
Detects and displays the output voltages.

Serial Port Console Redirection

This section is used to configure the serial port that will be used for console redirection.

Console Redirection
Enables or disables the console redirection.

Console Redirection Settings



Terminal Type

ANSI	Extended ASCII character set.
VT100	ASCII character set.
VT100+	Extends VT100 to support color, function keys, etc.
VT-UTF8	Uses UTF8 encoding to map Unicode characters onto 1 or more bytes.

Bits Per Second
Selects the serial port transmission speed. The speed must match the other side. Long or noisy lines may require a lower speed.

Data Bits
The options are 7 and 8.

Parity
A parity bit can be sent with the data bits to detect some transmission errors.

Even	Parity bit is 0 if the number of 1's in the data bits is even.
Odd	Parity bit is 0 if number of 1's in the data bits is odd.

Stop Bits
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Flow Control
Flow control can prevent data loss from buffer overflow. When sending data and the receiving buffers are full, a "stop" signal can be sent to stop the data flow.

VT-UTF8 Combo Key Support
Enables or disables VT-UTF8 combo key support.

Recorder Mode
When this field is enabled, only text will be sent. This is to capture the terminal data.

Resolution 100x31
Enables or disables extended terminal resolution.

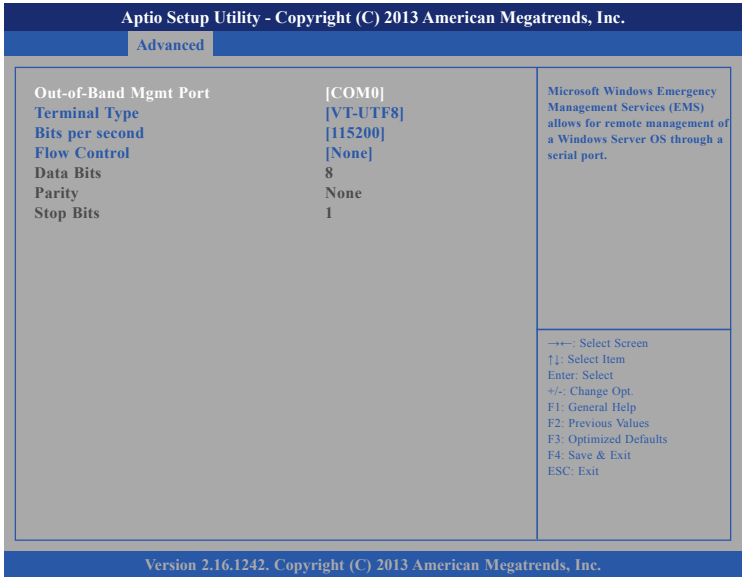
Legacy OS Redirection
Selects the number of rows and columns that support redirection.

Putty Keypad
Selects the Putty keyboard emulation type.

Redirection After BIOS POST
Enables or disables redirection after BIOS POST.

Serial Port for Out-of-Band Management

This section is used to configure the out-of-band management.

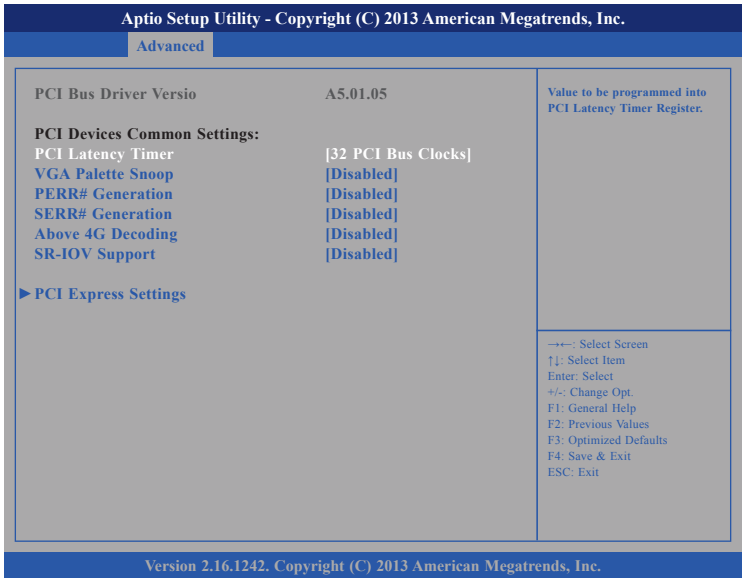


Out-of-Band Mgmt Port

Configures the out-of-band management port. Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS via a serial port.

PCI Subsystem Settings

This section is used to configure the PCI.



PCI Latency Timer

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

VGA Palette Snoop

Enables or disables the VGA palette registers snooping.

PERR# Generation

Enables or disables the PCI device to generate PERR#.

SERR# Generation

Enables or disables the PCI device to generate SERR#.

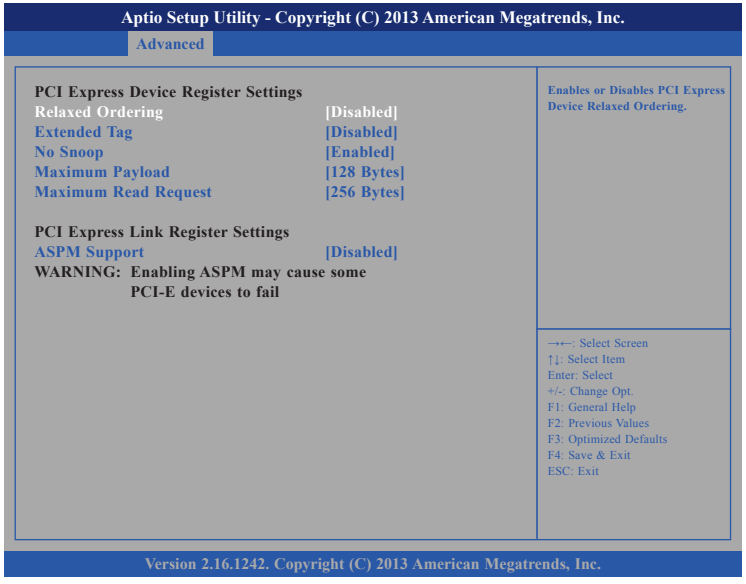
Above 4G Decoding

Enables or disables decoding of 64bit devices in 4G address space.

SR-IOV Support

Enables or disables SR-IOV support.

PCI Express Settings



Relaxed Ordering
Enables or disables the PCI Express device's relaxed ordering.

Extended Tag
When this function is enabled, it allows a device to use 8-bit tag field as a request.

No Snoop
Enables or disables the PCI Express device's no snoop option.

Maximum Payload
Selects the maximum TLP payload size of the PCI Express devices.

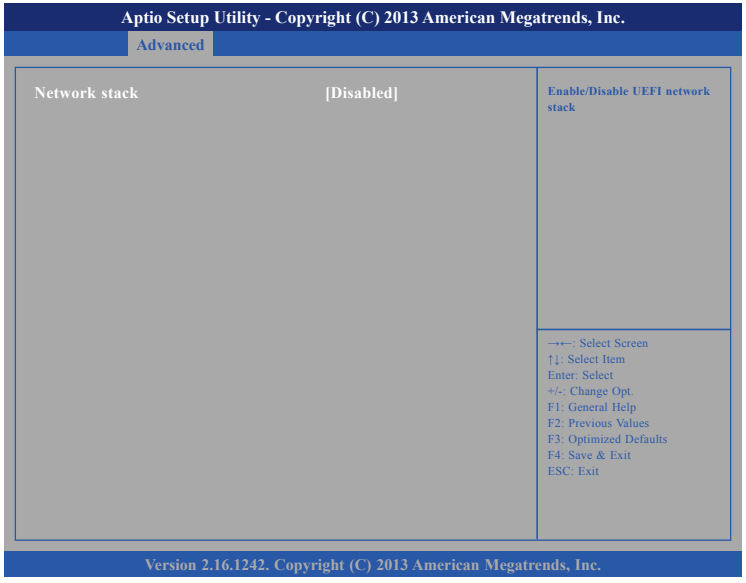
Maximum Read Request
Selects the maximum read request size of the PCI Express devices.

ASPM Support
Selects the ASPM level.

Force	L0 Forces all links to L0 state.
Auto	The BIOS automatically select an ASPM level.
Disable	Disables ASPM.

Network Stack

This section is used to configure the network stack.



Network Stack

Enables or disables UEFI network stack.

CSM Configuration

This section is used to configure the compatibility support module features.

CSM Support

This field is used to enable or disable CSM support, if Auto option is selected, based on OS, CSM will be enabled or disabled automatically.

GateA20 Active

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

Option ROM Messages
This field is used to set display mode for Option ROM. The options are Force BIOS and Keep Current.

INT19 Trap Response
Allows Option ROMs to trap Interrupt 19 when enabled.

Immediate	Execute the trap right away.
Postponed	Execute the trap during legacy boot.

Boot Option Filter
Configures which drives the system can boot from.

Network
Enables or disables the boot option for legacy network devices.

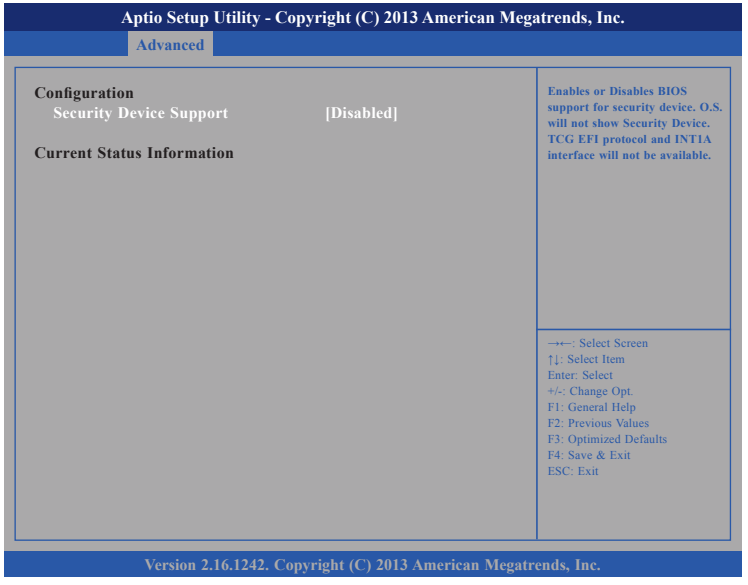
Storage
Enables or disables the boot option for legacy storage devices.

Video
Enables or disables the boot option for legacy video devices.

Other PCI Devices
Enables or disables the boot option for legacy PCI devices.

Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.



Security Device Support
Enables or disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

USB Configuration

This section is used to configure the USB.

Legacy USB Support

Enable Enables Legacy USB.
Auto Disables support for Legacy when no USB devices are connected.
Disable Keeps USB devices available only for EFI applications.

EHCI Hand-Off

This is a workaround for OSs that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

USB Mass Storage Driver Support

Enables or disables USB mass storage driver support.

USB Transfer Time-out

The time-out value for control, bulk, and Interrupt transfers.

Device Reset Time-out

Selects the USB mass storage device's start unit command timeout.

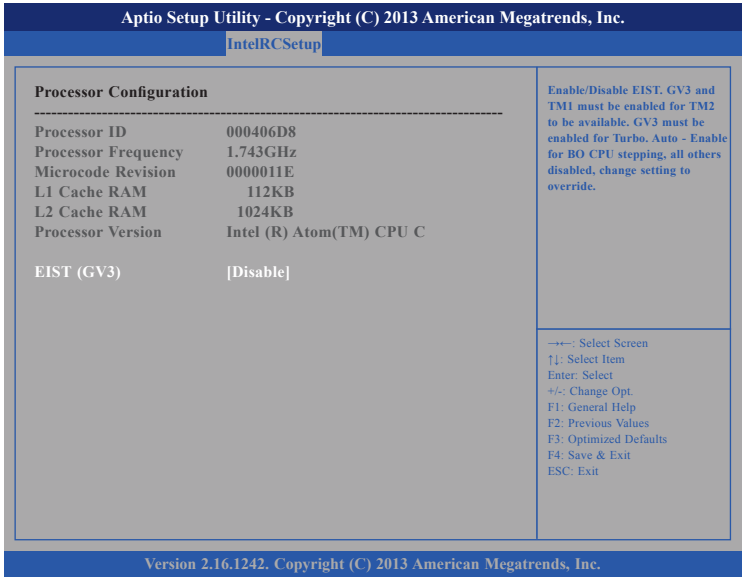
Device Power-up Delay

Maximum time the value will take before it properly reports it self to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Intel RC Setup

This section is used to configure the processor and chipset settings.

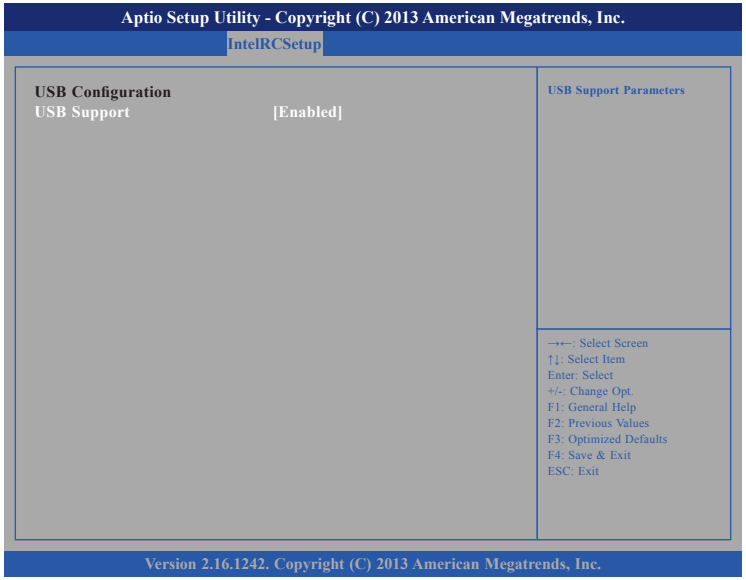
Processor Configuration



EIST (GV3)

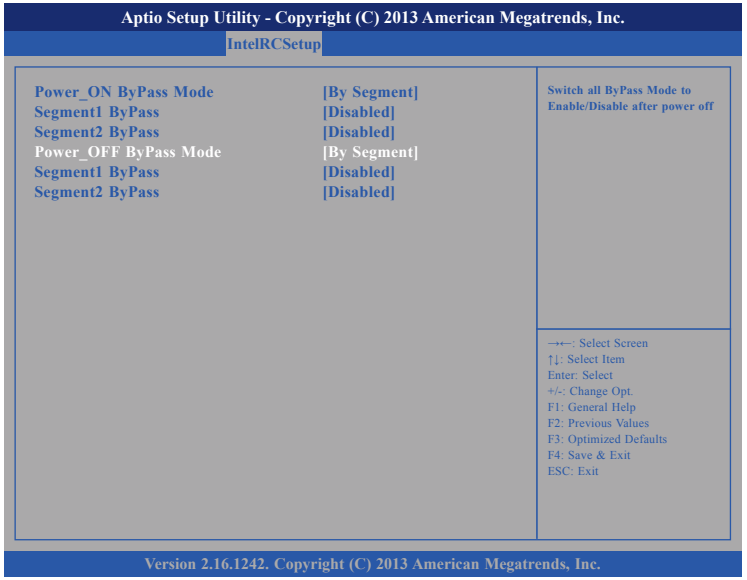
Enables or disables Intel® SpeedStep.

USB Configuration



USB Support
Enables or disables USB support.

Network Configuration



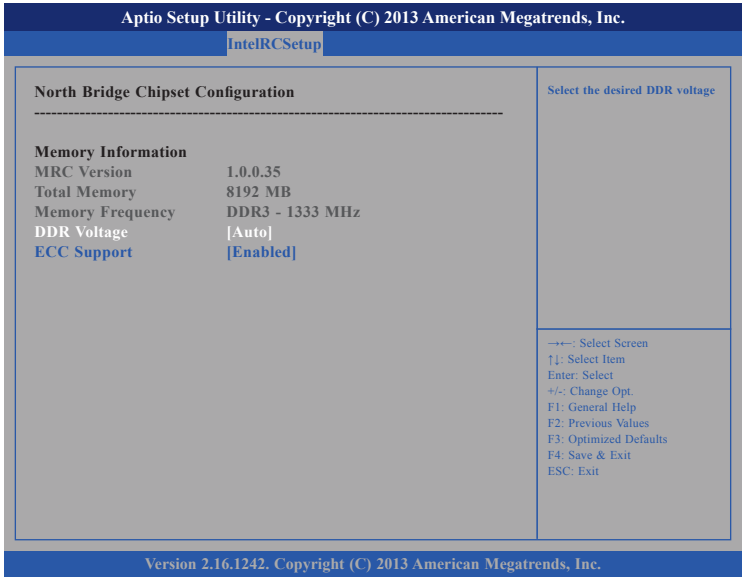
Power_ON ByPass Mode
Enables or disables the LAN module bypass mode after the system powers on.

Segment1 ByPass and Segment2 ByPass (Power On)
Enables or disables segment 1 and segment bypass after the system powers on.

Power_OFF ByPass Mode
Enables or disables the LAN module bypass mode after the system powers off.

Segment1 ByPass and Segment2 ByPass (Power Off)
Enables or disables segment 1 and segment bypass after the system powers on.

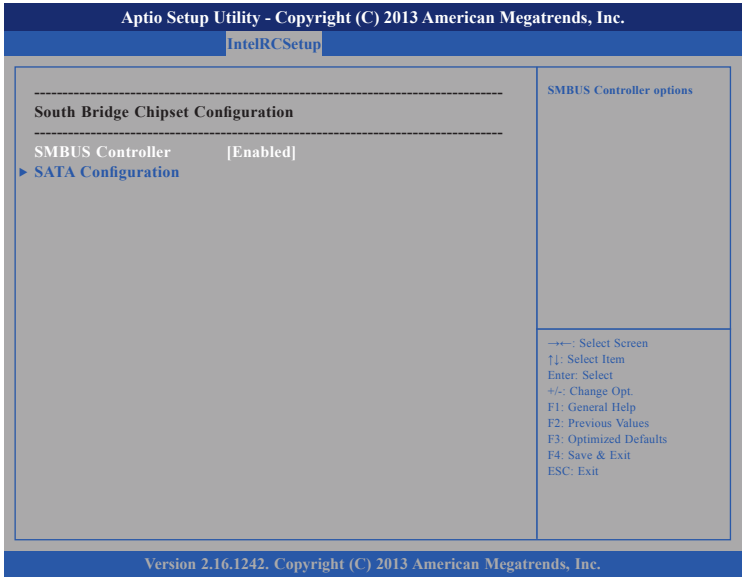
North Bridge Chipset Configuration



DDR Voltage
Configures the DDR voltage.

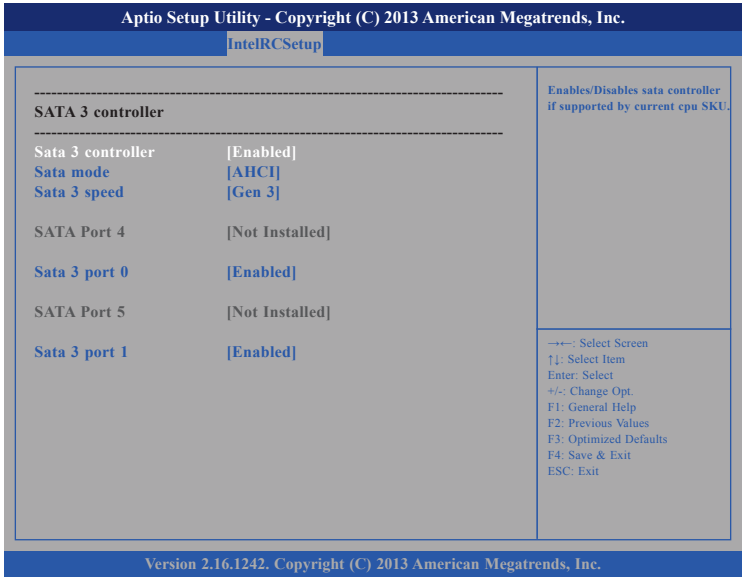
ECC Support
Enables or disables ECC RAM support.

South Bridge Chipset Configuration



SMBUS Controller
Enables or disables the SMBus controller.

SATA Configuration



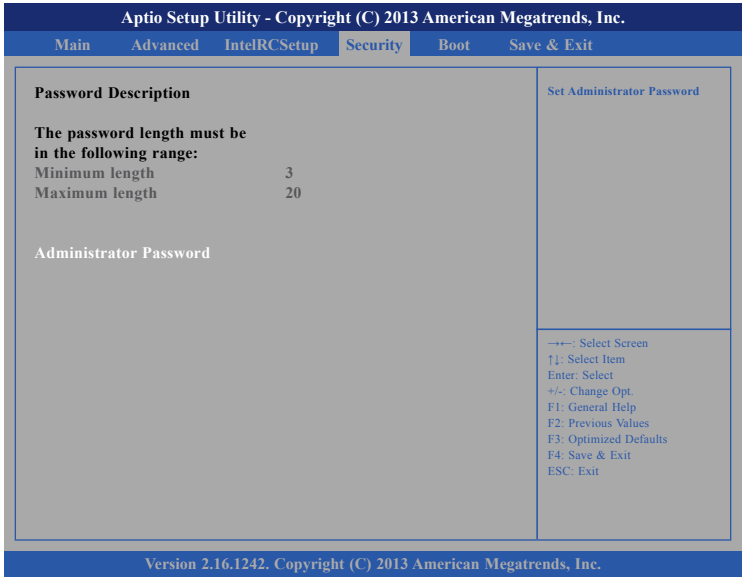
Sata 3 Controller
Enables or disables SATA controller if supported by current CPU SKU.

Sata Mode
Configures the SATA controller mode.

Sata 3 Speed
Configures the SATA controller to Gen1, Gen2 or Gen3 speed.

SATA 3 Port 0 and SATA 3 Port 1
Enables or disables SATA port 0 and SATA port 1.

Security

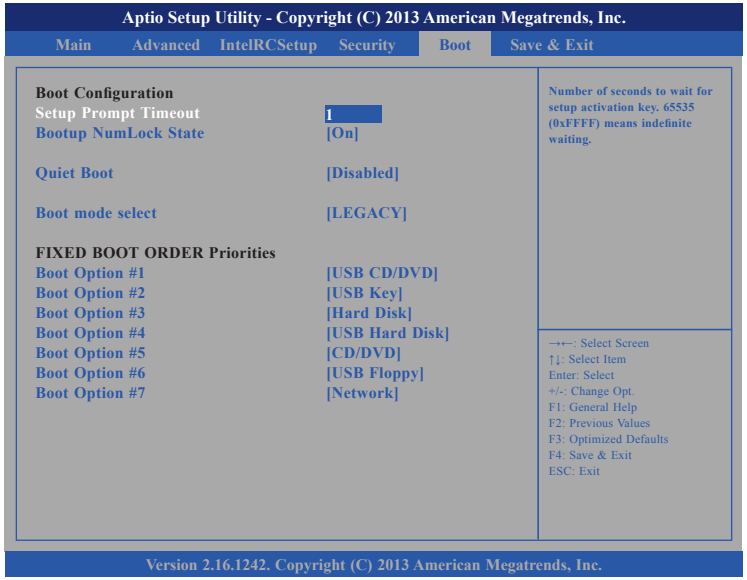


Administrator Password

Select this to reconfigure the administrator's password.

Boot

This section is used to configure the boot features.



Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

Enabled	Displays OEM logo instead of the POST messages.
Disabled	Displays normal POST messages.

Boot Mode Select

Configures the boot mode option.

Boot Option #1 to Boot Option #7

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be Boot Option #2 and so forth.

Save & Exit

Save Changes and Reset

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

Discard Changes and Reset

To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting. You can also press <ESC> to exit without saving the changes.

Appendix A: Bypass Register

Register Map

The following tables are the Register Map for DNA 1150.

PCB and CPLD Release Version Register (LSB)							
Offset 0xF1							
7	6	5	4	3	2	1	0
R				R			
PCB version (LSB)				CPLD release version (LSB)			

Power ON State Bypass Control Status Register							
Offset 0xF3							
7	6	5	4	3	2	1	0
R/W		R/W	R/W	R/W	R/W	R/W	R/W
Bypass Mode		Segment6	Segment5	Segment4	Segment3	Segment2	Segment1

Bypass Timer Configuration Register							
Offset 0xF2							
7	6	5	4	3	2	1	0
R	X	X	X	X	R/W		
Segment Timer Expired	Unused	Unused	Unused	Unused	Global Timeout Value		

Power OFF State Bypass Control Status Register							
Offset 0xF7							
7	6	5	4	3	2	1	0
R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
Unused	Unused	Segment6	Segment5	Segment4	Segment3	Segment2	Segment1

Slot Select Register							
Offset 0xF9							
7	6	5	4	3	2	1	0
R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
Slot ID 7	Slot ID 6	Slot ID 5	Slot ID 4	Slot ID 3	Slot ID 2	Slot ID 1	Slot ID 0

PCB and CPLD Release Version Register (MSB)							
Offset 0xFD							
7	6	5	4	3	2	1	0
R				R			
PCB version (MSB) / CPLD dot version				CPLD release version (MSB)			

Bypass Time/Force Mode Control Register							
Offset 0xFE							
7	6	5	4	3	2	1	0
R				R/W	R/W	R/W	R/W
CPLD identify bit				Unused	Unused	Unused	Timer/ force mode independent

Register Bit Definitions

PCB and CPLD Release Version Register (LSB): F1		
Bit Field	Name	Value
3:0	CPLD version LSB	CPLD version LSB, for CPLD release version control, the MSB info at address 'FD', **Read only**
7:4	PCB version LSB	PCB version LSB, the MSB info at address 'FD', **Read only**

Bypass Timer Configuration Register: F2		
Bit Field	Name	Value
2:0	Timer Value	000 = 0 second, timer immediately expired 001 = 1 second 010 = 2 second 011 = 4 second 100 = 8 second 101 = 16 second 110 = 32 second 111 = 64 second This register is available in Timer Enable mode. Timer value of 1 to 7 is required to be written before expiration of the hardware timer. When the timer expires, both segment relays which have been enabled will close. Note: The timer will recount while read/write F2 register.
6:3	Unused	Unused
7	Segment Timer Expired	**Read only bit:** 0 = Timer has not expired 1 = Timer has expired, de-assert while leave Timer mode

Power ON State Bypass Control Status Register: F3		
Bit Field	Name	Value
1:0	Segment 2 to 1	Segment bypass function control on Power ON state. Bit[x] corresponds to segment[x+1], ex: Bit0 control to segment1, … Bit5 control to segment6 0 = Segment[x] disable 1 = Segment[x] enable
2:5	Unused	0000
7:6	Bypass Mode	These two bits defined the bypass in timer mode or force mode. Note: The timer will recount while read/write F3 register Limitation: Changing F3 segment bit during timer counting, the timing mode segment will controlled by last change value. Bypass Mode Table:

Bit 7	Bit 6	Action
0	0	Timer Disable: Disable Timer mode function.
0	1	Force Enable: Engage bypass relays on segments enable in segment mask.
1	0	Force Disable: Disable bypass relays immediately on segments enabled in mask.
1	1	Timer Enable: Segments enabled in mask are under Timer control.

Power OFF State Bypass Control Status Register: F7		
Bit Field	Name	Value
1:0	Segment 2 to 1	Segment bypass function control on Power ON state. Bit[x] corresponds to segment[x+1], ex: Bit0 control to segment1, … Bit5 control to segment6 0 = Segment[x] disable 1 = Segment[x] enable
7:2	Unused	000000

Slot Select Register: F9		
Bit Field	Name	Value
7:0	Slot ID bit 7 to 0	Main board: The bypass function workable while Slot ID set to 0x00h Lan module: The bypass function workable while Slot ID value meet H/W setting, The value do not set to 0x00h Note: If all of boards not fill slot id value on platform, read all registers will return 0xFF

PCB and CPLD Release Version Register (MSB): FD		
Bit Field	Name	Value
3:0	CPLD version MSB	CPLD version MSB, for CPLD release version control, the LSB info at address 'F1', **Read only**
7:4	CPLD dot / PCB version MSB	The value >= "A" is CPLD dot version information. The value < "A" indicate PCB version MSB, **Read only**

Bypass Timer/Force Mode Control Register: FE		
Bit Field	Name	Value
0	Timer/force mode independent	0 = Timer/force mode dependent, the timer will stop in force mode condition. 1 = Timer/force mode Independent, the timer will stop in timer disable condition.
3:1	Unused	Unused
7:4	New CPLD	Always read "0xa", **Read only**