Intelligent Platform & Services Business Unit
Embedded Computing (Industrial Motherboard)
NEX 650
User Manual

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PREFACE

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Acknowledgements

NEX 650 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 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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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.

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.

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Package Contents

Before continuing, verify that the NEX 650 package that you received is complete. Your package should have all the items listed in the following table.

Item	Name	Qty
1	NEXCOM NEX 650 Motherboard	1
2	NEXCOM NEX 650 Driver CD	1
3	NEXCOM NEX 650 Quick Guide	1
4	I/O Panel Shield	1

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Ordering Information

The following information below provides ordering information for NEX 650.

NEX 650 (P/N: 10G00065001X1)

Mini-ITX form factor powered by onboard 4-core Intel® Celeron® J1900 processor that integrates with 24/48-bit LVDS & up to 8GB DDR3/L memory & rich I/Os

CHAPTER 1: PRODUCT INTRODUCTION

Overview
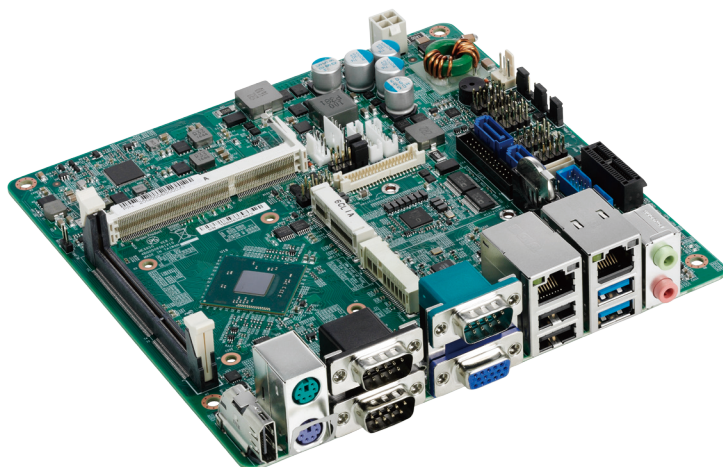
Key Features

- Intel® Celeron® processor J1900

- Integrated Intel® Gen7 Intel® Graphics DX 11*, OGL3.2

- Supports dual channel DDR3L 1333MHz, 2 x SO-DIMM, up to 8GB system memory

- 3 x COM (RS-232/422/485), 2 x COM (RS-232); 1 x HDMI, 1 x D-Sub,

- 1 x Dual channel 24-bit LVDS; 4 x USB 3.0, 6 x USB 2.0, 2 x SATA2; Gigabit LAN: 2 x Realtek LAN

- 12~24 V DC-in power support

Hardware Specifications

Form Factor

- Dimensions: Mini-ITX (6.7-in x 6.7-in)

Processor System

- CPU: Intel® Celeron® processor J1900
- Core number: 4
- L3 cache: 2MB
- Chipset: N/A
- BIOS: UEFI

Expansion Slot

- Mini-PCIe: 1 (full size)
- mSATA: 1
- PCIe: 1

Memory

- Technology: dual channel DDR3L 1333 MHz SDRAM
- Max.: 8GB
- Socket: 2 x SO-DIMM

Graphics

- Controller: Intel® Gen7 Intel® graphics DX 11*, OGL3.2
- VRAM: shared memory
- VGA: supports max. resolution 1920 x 1200
- LVDS: dual channel 24-bit, max resolution 1920 x 1200 @ 60Hz
- HDMI: supports HDMI 1.3a, max resolution 1920 x 1200

Ethernet

- Ethernet: 10/100/1000 Mbps
- Controller: GbE LAN: 2 x Realtek RTL8111G-CG
- Connector: 2 x RJ-45

Rear I/O

- VGA: 1
- HDMI: 1
- Ethernet: 2
- USB: 4 (2 x USB 3.0, 2 x USB 2.0)
- Audio: 2 (Mic-in, Line-out)
- Serial: 3 (RS-232/422/485)
- PS2: 2 (1 x keyboard, 1 x mouse)

Internal Connector

- USB: 6 (2 x USB 3.0, 4 x USB 2.0)
- LVDS/inverter: 1/1
- VGA: 1 (shared with rear I/O VGA COM)
- Serial: 2 (RS-232)
- SATA: 2 x SATA2 (3.0Gb/s)
- mPCIe: 1
- Parallel: 1
- mSATA: 1 (shared)
- GPIO 8-bit: 4 x GPI + 4 x GPO
- SATA PWR output con: 1
- Speaker header: 1

Watchdog Timer

- Output: from super I/O to drag RESETCON#
- Interval: 256 segments, 0, 1, 2…255sec/min

Power Requirements

- Input PWR: 12~24V DC-in (4-pin ATX PWR Con)
- Power on: AT/ATX supported
- AT: directly PWR on as power input ready
- ATX: press button to PWR on after power input ready

Environment

- Temperature: 0°C~60°C

Knowing Your NEX 650

Top View

DIMM

COM1 Power Select

COM2 Power Select

mSATA Select

LVDS

Chassis Intrusion

LPT

AT/ATX Select

RTC CMOS Clear

USB 3.0 Connector

Front Panel Audio

2W Audio APM Output

PCIe

SO-DIMM

mSATA

Mini-PCIe

USB 2.0

Panel Power Select

Backlight Power Select

CPU Fan

SATA Power

Backlight Volume Control

Backlight Power

SATA2 Connectors

4-pin ATX Power

System Panel Header

USB 2.0

TPM

COM4/
COM6

Backlight
Control Level

JGPIO_JP

DI/DO
Power Select

System Fan

DI/DO

Rear I/O View

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the NEX 650 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)
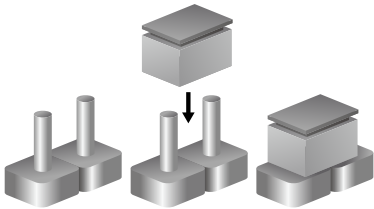
Three-Pin Jumpers: Pins 1 and 2 are Short
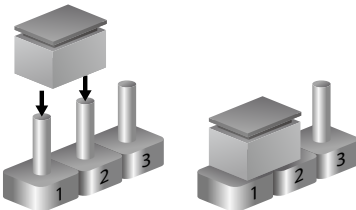
Locations of the Jumpers and Connectors

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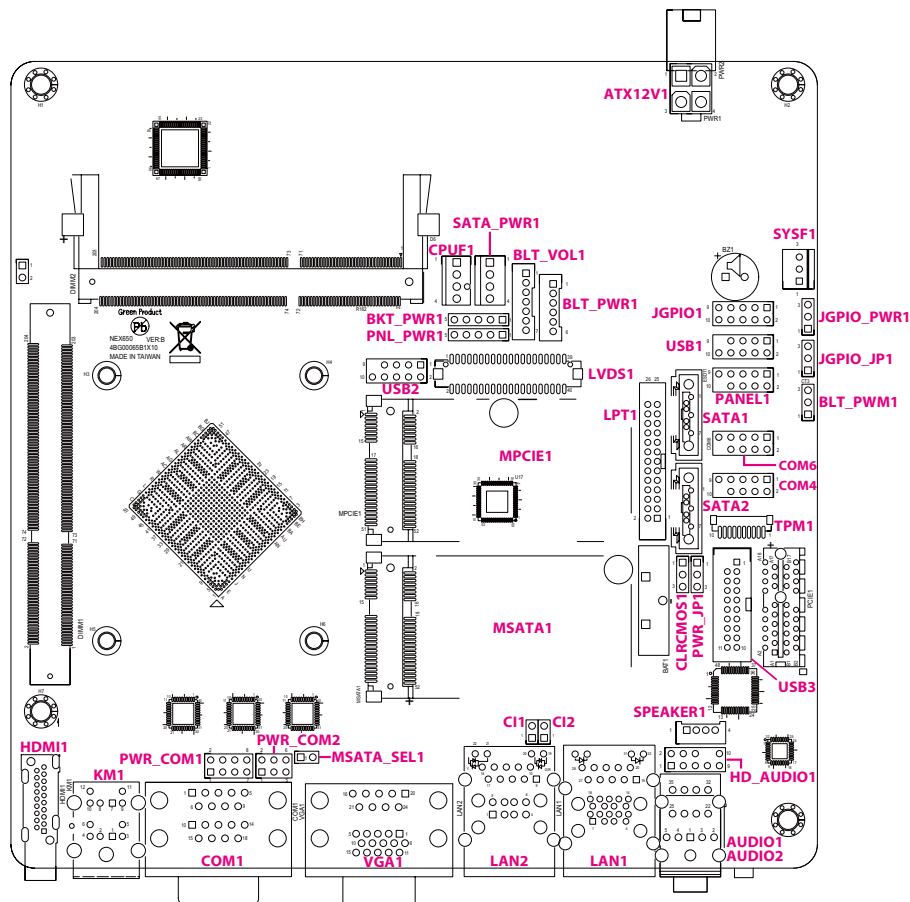
Jumpers

ATX/AT Mode Jumper

Connector type: 1x3 3-pin header
Connector location: PWR_JP1

1 ▢ ○ ○ 3

Pin	Status	Settings
1-2 On	Short	AT Mode
2-3 On	Short	ATX Mode

1-2 On: default

Backlight Control Level

Connector type: 1x3 3-pin header
Connector location: BLT_PWM1

1 ▢ ○ ○ 3

Pin	Status	Settings
1-2 On	Short	+3V Level
2-3 On	Short	+5V Level

1-2 On: default

Panel Power Selection (LCD_VCC)

Connector type: 1x5 5-pin header
Connector location: PNL_PWR1

1 ☐ ○ ○ ○ ○ 5

Pin	Status	Settings
1-2 On	Short	LVDD: +3V
2-3 On	Short	LVDD: +5V
4-5 On	Short	LVDD: +12V

1-2 On: default

Backlight Power Selection (LCD_BLT_VCC)

Connector type: 1x5 5-pin header
Connector location: BKT_PWR1

1 ☐ ○ ○ ○ ○ 5

Pin	Status	Settings
1-2 On	Short	LCD_BLT_VCC: +5V
2-3 On	Short	LCD_BLT_VCC: +12V
4-5 On	Short	LCD_BLT_VCC: DC_IN

1-2 On: default

COM1 Power Select

Connector type: 2x4 8-pin header, 2.54mm pitch
Connector location: PWR_COM1
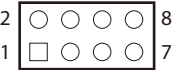
Pin	Status	Settings
1-2 On	Short	+5V
3-4 On	Short	+12V
5-6 On	Short	+5VSB
7-8 On	Short	RI#

7-8 On: default

COM2 Power Select

Connector type: 2x3 6-pin header, 2.54mm pitch
Connector location: PWR_COM2
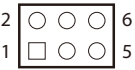
Pin	Status	Settings
1-2 On	Short	+5V
3-4 On	Short	+12V
5-6 On	Short	RI#

5-6 On: default

mSATA Select

Connector type: 1x2 2-pin header
Connector location: mSATA_SEL1

1 ☐ ◯ 2

Pin	Status	Settings
1-2 On	Short	For mSATA1
1-2 Off	Open	For SATA2

1-2 Off: default

CMOS Clear Select

Connector type: 1x2 2-pin header
Connector location: CLRCMOS1

1 ☐ ◯ 2

Pin	Status	Settings
1-2	Short	Normal
2-3	Short	Clear CMOS

1-2 On: default

Digital Input/Output Power Select

Connector type: 1x3 3-pin header
Connector location: JGPIO_PWR1

1 □ ○ ○ 3

Pin	Status	Settings
1-2 On	Short	+12V
2-3 On	Short	+5V

JGPIO_JP Jumper

Connector type: 1x3 3-pin header
Connector location: JGPIO_JP1

1 □ ○ ○ 3

Pin	Status	Settings
1-2 On	Short	High
2-3 On	Short	Low

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Connector Pin Definitions

External Connectors

HDMI Port

Connector type: HDMI port
Connector location: HDMI1
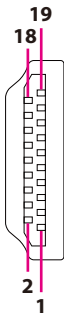
Pin	Definition	Pin	Definition
1	HDMI_DATA2_P_C	2	GND
3	HDMI_DATA2_N_C	4	HDMI_DATA1_P_C
5	GND	6	HDMI_DATA1_N_C
7	HDMI_DATA0_P_C	8	GND
9	HDMI_DATA0_N_C	10	HDMI_CLK_P_C
11	GND	12	HDMI_CLK_N_C
13	NC	14	NC
15	HDMI_CTRL_CLK_C	16	HDMI_CTRL_DATA_C
17	GND	18	+5V_HDMI
19	HDMI_HPD_C		

PS/2 Keyboard and Mouse

Connector type: PS/2, Mini-DIN-6
Connector location: KM1
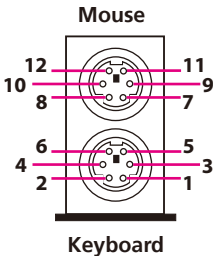
Pin	Definition	Pin	Definition
1	KDAT_C	2	NC
3	GND	4	+5V_PS2
5	KCLK_C	6	NC
7	MDAT_C	8	NC
9	GND	10	+5V_PS2
11	MCLK_C	12	NC

COM1 Port

Connector type: DB-9 port, 9-pin D-Sub
Connector location: COM1
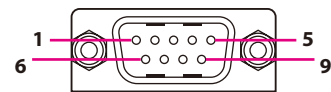
	RS232		RS422		RS485
Pin	Definition	Pin	Definition	Pin	Definition
1	DCD#	1	TX-	1	RTX-
2	RXD	2	TX+	2	RTX+
3	TXD	3	RX+	3	NC
4	DTR#	4	RX-	4	NC
5	GND	5	GND	5	GND
6	DSR#	6	NC	6	NC
7	RTS#	7	NC	7	NC
8	CTS#	8	NC	8	NC
9	RI#	9	NC	9	NC

VGA Port

Connector type: DB-15 port, 15-pin D-Sub
Connector location: VGA1
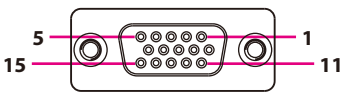
Pin	Definition	Pin	Definition
1	VGA_R	2	VGA_G
3	VGA_B	4	GND
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	ID2	12	VGA_DDC_DATA
13	G_HSYNC	14	G_VSYNC
15	VGA_DDC_CLK		

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LAN2 and USB 2.0 Ports

Connector type: RJ45 port with LEDs
　　　　　　　　Dual USB 2.0 ports, Type A
Connector location: LAN2
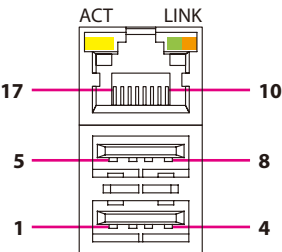
Act	Status
Flashing Yellow	Data activity
Off	No activity

Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	10Mbps or no link

USB

Pin	Definition	Pin	Definition
1	+5V_H_USB2_P12	2	S_USB_C_DN1
3	S_USB_C_DP1	4	GND
5	+5V_H_USB2_P12	6	S_USB_C_DN2
7	S_USB_C_DP2	8	GND

LAN

Pin	Definition	Pin	Definition
9	LAN1_VCT	10	MDI0P_LAN1
11	MDI0N_LAN1	12	MDI1P_LAN1
13	MDI1N_LAN1	14	MDI2P_LAN1
15	MDI2N_LAN1	16	MDI3P_LAN1
17	MDI3N_LAN1	18	GND
19	LAN1_ACT_P	20	LAN1_LED_ACT#
21	LAN1_LINK100#	22	LAN1_1000_P

LAN1 and USB 3.0 Ports

Connector type: RJ45 port with LEDs
Dual USB 3.0 ports, Type A
Connector location: LAN1
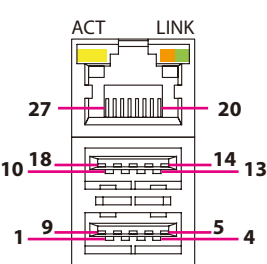
Act	Status
Flashing Yellow	Data activity
Off	No activity

Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	10Mbps or no link

USB

Pin	Definition	Pin	Definition
1	+5V_USB3_P12	2	USB2_C_N1
3	USB2_C_P1	4	GND
5	USB3_RX_C_N1	6	USB3_RX_C_P1
7	GND	8	USB3_TX_C_N1
9	USB3_TX_C_P1	10	+5V_USB3_P12
11	USB2_C_N2	12	USB2_C_P2
13	GND	14	USB3_RX_C_N2
15	USB3_RX_C_P2	16	GND
17	USB3_TX_C_N2	18	USB3_TX_C_P2

LAN

Pin	Definition	Pin	Definition
19	LAN0_VCT	20	MDI0P_LAN0
21	MDI0N_LAN0	22	MDI1P_LAN0
23	MDI1N_LAN0	24	MDI2P_LAN0
25	MDI2N_LAN0	26	MDI3P_LAN0
27	MDI3N_LAN0	28	GND
29	LAN0_ACT_P	30	LAN0_LED_ACT#
31	LAN0_LINK100#	32	LAN0_1000_P

Audio Connectors

Connector type: 2x 3.5mm jack
Connector location: AUDIO1 and AUDIO2

Line-out

Mic-in
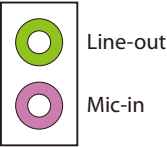
Pin	Definition	Pin	Definition
1	GND	2	MIC_OUT_L_C
3	MIC1_JD	4	AGND_P
5	MIC_OUT_R_C	N/A	N/A
22	LINE_OUT_L_C	23	LINEOUT1_JD
24	AGND_G	25	LINE_OUT_R_C

Internal Connectors

SATA Connectors

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA1 and SATA2

USB 2.0 Headers

Connector type: 2x5 10-pin header
Connector location: USB1 and USB2
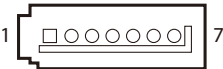
Pin	Definition	Pin	Definition
1	GND	2	TXP0
3	TXN0	4	GND
5	RXN0	6	RXP0
7	GND		
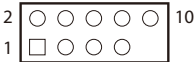
Pin	Definition	Pin	Definition
1	USB_PWR	2	USB_PWR
3	-A	4	-B
5	+A	6	+B
7	GND	8	GND
		10	DUMMY

System Panel Header

Connector type: 2x5 10-pin header
Connector location: PANEL1

2W Audio AMP Output Wafer

Connector type: 1x4 4-pin header
Connector location: SPEAKER1
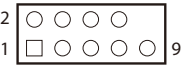
Pin	Definition	Pin	Definition
1	HDLED+	2	PLED+
3	HDLED-	4	PLED-
5	GND	6	PWRBTN#
7	RESET#	8	GND
9	GND		
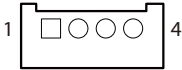
Pin	Definition
1	OUTLN
2	OUTLP
3	OUTRP
4	OUTRN

Front Panel Audio Header

Connector type: 2x5 10-pin header
Connector location: HD_AUDIO1

CPU FAN Connector

Connector type: 1x4 4-pin Wafer
Connector location: CPUF1
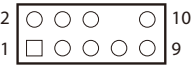
Pin	Definition	Pin	Definition
1	MIC2_L	2	GND
3	MIC2_R	4	PRESENCE#
5	OUT2_R	6	MIC_RET
7	J_SENSE		
9	OUT2_L	10	OUT_RET

Pin	Definition
1	GND
2	+12V
3	CPU_FAN_SPEED
4	FAN_SPEED_CONTROL

DC-In Power Connector

Connector type: 2x2 4-pin power connector
Connector location: ATX12V1
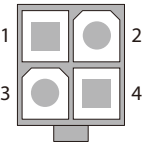
Pin	Definition
1	GND
2	GND
3	DC Input
4	DC Input

Printer Port Box Header

Connector type: 2x13 26-pin header
Connector location: LPT1
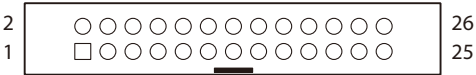
Pin	Definition	Pin	Definition
1	STB#	2	AFD#
3	SPD0	4	ERROR#
5	SPD1	6	PINIT#
7	SPD2	8	SLIN#
9	SPD3	10	GND
11	SPD4	12	GND
13	SPD5	14	GND
15	SPD6	16	GND
17	SPD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT		

LVDS Connector

Connector type: 2x20 40-pin header
Connector location: LVDS1

Digital Input/Output Pin Header

Connector type: 2x5 10-pin header
Connector location: JGPIO1
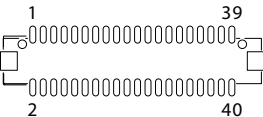
Pin	Definition	Pin	Definition
1	LCD_VCC	2	LCD_VCC
3	+3.3V	4	LDDC_CLK
5	LDDC_DATA	6	LVDS_A_DATA0#
7	LVDS_A_DATA0	8	GND
9	LVDS_A_DATA1#	10	LVDS_A_DATA1
11	GND	12	LVDS_A_DATA2#
13	LVDS_A_DATA2	14	GND
15	LVDS_A_DATA3#	16	LVDS_A_DATA3
17	GND	18	LVDS_A_CLK#
19	LVDS_A_CLK	20	GND
21	LVDS_B_DATA0#	22	LVDS_B_DATA0
23	GND	24	LVDS_B_DATA1#
25	LVDS_B_DATA1	26	GND
27	LVDS_B_DATA2#	28	LVDS_B_DATA2
29	DPLVDD_EN	30	LVDS_B_DATA3#
31	LVDS_B_DATA3	32	GND
33	LVDS_B_CLK#	34	LVDS_B_CLK
35	GND	36	CON_LBKLT_EN
37	CON_LBKLT_CTL	38	LCD_BLT_VCC
39	LCD_BLT_VCC	40	LCD_BLT_VCC

Pin	Definition	Pin	Definition
1	SIO_GP24	2	SIO_GP20
3	SIO_GP25	4	SIO_GP21
5	SIO_GP26	6	SIO_GP22
7	SIO_GP27	8	SIO_GP23
9	JGPIO_PWR	10	GND

Backlight Volume Control

Connector type: 1x7 7-pin header
Connector location: BLT_VOL1
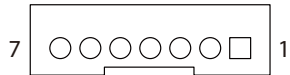
Pin	Definition	Pin	Definition
1	GPIO_VOL_UP	2	GPIO_VOL_DW
3	PWRDN	4	LVDS1 BLUP
5	LVDS1 BLDW	6	GND
7	GND		

Backlight Power Connector

Connector type: 1x6 6-pin header
Connector location: BLT_PWR1
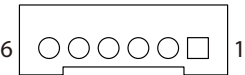
Pin	Definition	Pin	Definition
1	GND	2	GND
3	BL CTL	4	BL EN
5	LCD_BLT_VCC	6	LCD_BLT_VCC

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SATA Power Output Connector

Connector type: 1x4 4-pin Wafer
Connector location: SATA_PWR1
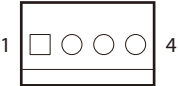
Pin	Definition
1	+12V
2	GND
3	GND
4	+5V

Chassis Intrusion Pin Headers

Connector type: 1x2 2-pin header
Connector location: CI1 and CI2

Pin	Definition
1	Signal
2	GND

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COM4 and COM6 Pin Headers

Connector type: 2x5 10-pin header
Connector location: COM4 and COM6

USB 3.0 + USB 2.0 Connector

Connector type: 2x10 20-pin header
Connector location: USB3
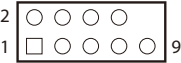
Pin	Definition	Pin	Definition
1	DDCD#	2	RRXD
3	TTXD	4	DDTR#
5	GND	6	DDSR#
7	RRTS#	8	CCTS#
9	CM_P9		
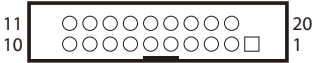
Pin	Definition	Pin	Definition
1	Dummy	2	PORT B USB
3	PORT B USB	4	GND
5	PORT B USB	6	PORT B USB
7	GND	8	PORT B USB
9	PORT B USB	10	Vbus
11	PORT A USB	12	PORT A USB
13	GND	14	PORT A USB
15	PORT A USB	16	GND
17	PORT A USB	18	PORT A USB
19	Vbus	20	

TPM Connector

Connector type: 1x10 10-pin header
Connector location: TPM1

Pin	Definition	Pin	Definition
1	GND	2	PLTRST_3P3#
3	S_ILB_LPC_CLK_1	4	S_ILB_LPC_FRAME#
5	S_ILB_LPC_AD_3	6	S_ILB_LPC_AD_2
7	S_ILB_LPC_AD_1	8	S_ILB_LPC_AD_0
9	ILB_LPC_SERIRQ	10	+3.3V

System Fan Connector

Connector type: 1x3 3-pin Wafer
Connector location: SYSF1

Pin	Definition
1	GND
2	+12V
3	FAN_SPEED

Mini-PCIe/mSATA Connector

Connector location: MPCIE1 and MSATA1
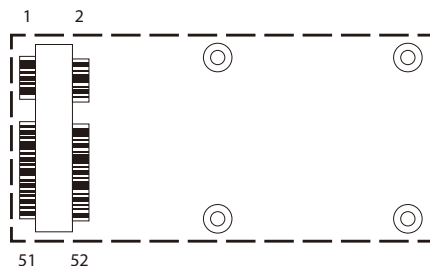
Pin	Definition	Pin	Definition
1	WAKE#	2	3.3VSB_3
3	COEX1	4	GND12
5	COEX2	6	1.5V_3
7	CLKREQ#	8	UIM_PWR
9	GND6	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND5	16	UIM_VPP
17	REV10/UIM_C8	18	GND11
19	REV9/UIM_C4	20	W_DISABLE#
21	GND4	22	PERST#
23	PERn0	24	+3.3VSB_1
25	PERp0	26	GND10

Pin	Definition	Pin	Definition
27	GND3	28	1.5V_2
29	GND2	30	SMBCLK
31	PETn0	32	SMBDAT
33	PETp0	34	GND9
35	GND0	36	USB_D-
37	GND13	38	USB_D+
39	+3.3VSB_4	40	GND8
41	+3.3VSB_5	42	LED_WWAN#
43	GND14	44	LED_WLAN#
45	REV4	46	LED_WPAN#
47	REV3	48	1.5V_1
49	REV2	50	GND7
51	REV1	52	3.3VSB_2

Block Diagram
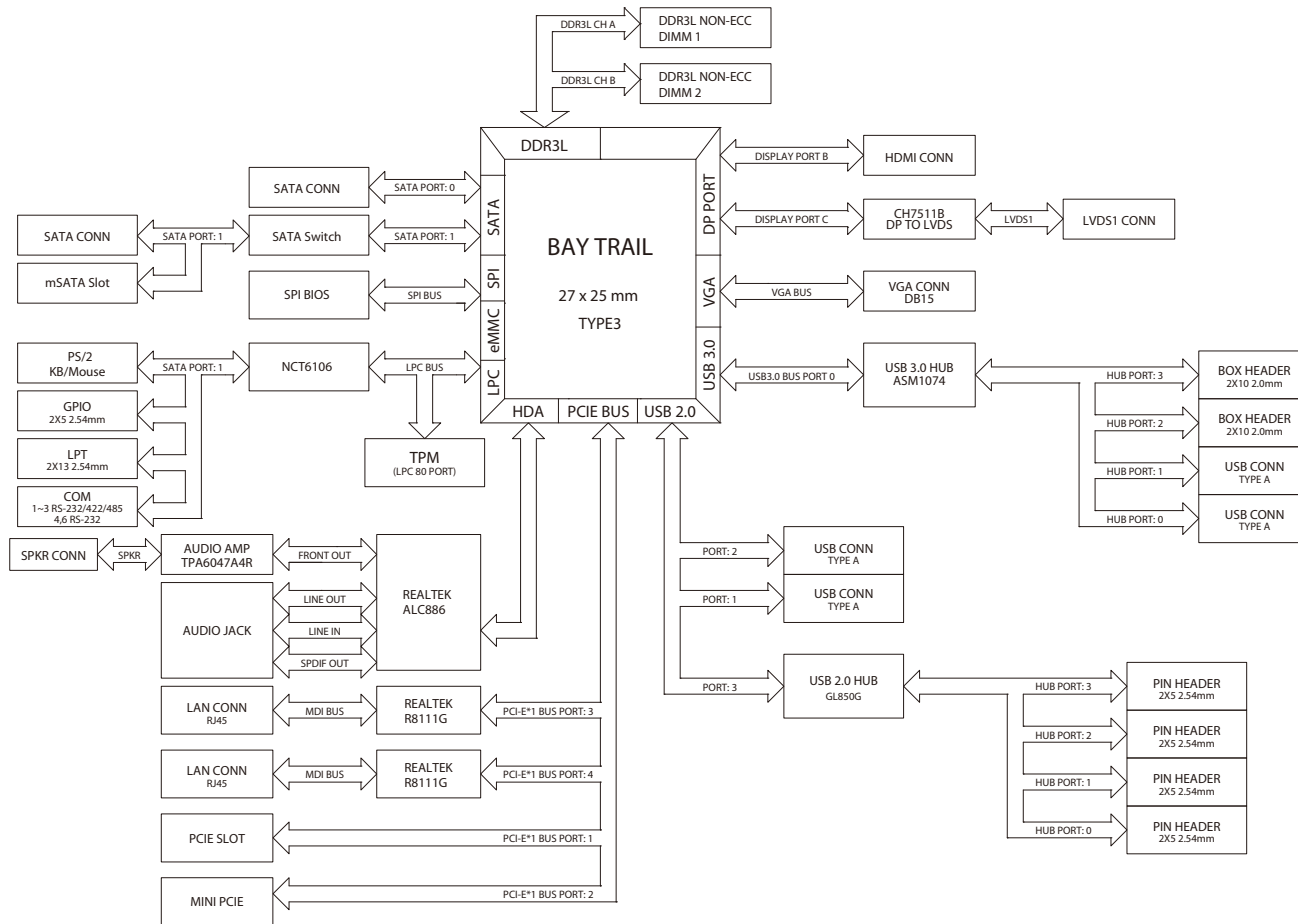
CHAPTER 3: BIOS SETUP

This chapter describes how to use the BIOS setup program for NEX 650. 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 website 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 items such 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 <Del> allows you to enter Setup.

Press the ⌨Del key to enter Setup:

Legends

Key	Function
← →	Moves the highlight left or right to select a menu.
↑ ↓	Moves the highlight up or down between sub-menus or fields.
Esc	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.
Tab	Selects a field.
F1	Displays General Help.
F2	Load previous values.
F3	Load optimized default values.
F4	Saves and exits the Setup program.
Enter	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 Enter .

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.

```
         Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
   Main      Advanced    Chipset    Security      Boot     Save & Exit

   BIOS Information                                          Set the Date. Use Tab to switch
   BIOS Vendor              American Megatrends              between Date elements.
   Core Version             5.010
   Compliancy              UEFI 2.4; PI 1.3
   Project Name            NEX-650
   Project Version         N650A011 x64
   Build Date and Time     05/18/2017 10:15:21

   CPU Configuration
   Microcode Patch          833

   Memory Information
   Total Memory             2048 MB (DDR3L)
                                                            →←: Select Screen
   System Date              [Sat 06/03/2017]               ↑↓: Select Item
   System Time              [10:06:47]                     Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit



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```

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.

```
         Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
  Main       Advanced     Chipset     Security     Boot     Save & Exit

  OS Selection                  [Windows 7]          OS Selection

  ► ACPI Settings
  ► NCT6106D Super IO Configuration
  ► NCT6106D HW Monitor
  ► CPU Configuration
  ► PPM Configuration
  ► IDE Configuration
  ► USB Configuration

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

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```

OS Selection
Configures the target OS. The options are Windows 7 and Windows 8.X.

ACPI Settings

This section is used to configure ACPI Settings.

```
         Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
       Advanced

  ACPI Settings                                      Enables or Disables System
                                                     ability to Hibernate (OS/S4 Sleep
  Enable Hibernation           [Enabled]             State). This option may be not
  ACPI Sleep State             [S3 (Suspend to RAM)] effective with some OS.

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

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```

Enable Hibernation
Enables or disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

ACPI Sleep State
Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

NCT6106D Super IO Configuration

This section is used to configure the serial ports.

```
            Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
   Advanced

   NCT6106D Super IO Configuration                          Set Parameters of Serial Port
                                                            1 (COMA)
   Super IO Chip                      NCT6106D
 ▶ Serial Port 1 Configuration
 ▶ Serial Port 2 Configuration
 ▶ Serial Port 3 Configuration
 ▶ Serial Port 4 Configuration
 ▶ Serial Port 6 Configuration
 ▶ Parallel Port Configuration



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


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```

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

Serial Port 1 Configuration

This section is used to configure serial port 1.

```
            Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
   Advanced

   Serial Port 1 Configuration                              Enable or Disable Serial Port
                                                            (COM)
   Serial Port                        [Enabled]
   Device Settings                    IO=3F8h; IRQ=4;

   Serial Port Mode                   [RS232]




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


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```

Serial Port
Enables or disables the serial port.

Serial Port Mode
Select this to change the serial port mode to RS232, RS422 or RS485.

Serial Port 2 Configuration

This section is used to configure serial port 2.

Serial Port
Enables or disables the serial port.

Serial Port Mode
Select this to change the serial port mode to RS232, RS422 or RS485.

Serial Port 3 Configuration

This section is used to configure serial port 3.

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Advanced

Serial Port 3 Configuration

Serial Port   [Enabled]
Device Settings   IO=3E8h; IRQ=6;

Serial Port Mode   [RS232]

Enable or Disable Serial Port (COM)

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

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Serial Port
Enables or disables the serial port.

Serial Port Mode
Select this to change the serial port mode to RS232, RS422 or RS485.

Serial Port 4 Configuration

This section is used to configure serial port 4.

Advanced

Serial Port 4 Configuration

| Serial Port | [Enabled] |
| Device Settings | IO=2E8h; IRQ=10; |

Enable or Disable Serial Port (COM)

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

Serial Port
Enables or disables the serial port.

Serial Port 6 Configuration

This section is used to configure serial port 6.

Advanced

Serial Port 6 Configuration

| Serial Port | [Enabled] |
| Device Settings | IO=2F0h; IRQ=7; |

Enable or Disable Serial Port (COM)

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

Serial Port
Enables or disables the serial port.

Parallel Port Configuration

This section is used to configure the parallel port.

```
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   Advanced

   Parallel Port Configuration                          Enable or Disable Parallel
                                                        Port (LPT/LPTE)
   Parallel Port                  [Enabled]
   Device Settings                IO=378h; IRQ=5;

   Change Settings                [Auto]
   Device Mode                    [STD Printer Mode]




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



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```

Parallel Port
Enables or disables the parallel port.

Change Settings
Selects the optimal setting for the Super IO device.

Device Mode
Selects the parallel port mode.

NCT6106D HW Monitor

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

```
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     Advanced

    Pc Health Status

    System temperature          :  +42.5 °c
    CPU temperature             :  +38 °c
    SYS Fan Speed               :  N/A
    CPU Fan Speed               :  N/A
    VCORE                       :  +0.840 V
    +3.3V                       :  +3.392 V
    +5V                         :  +5.020 V
    +12V                        :  +12.000 V

    Case Open Feature              [Disabled]

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



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```

System Temperature
Detects and displays the current system temperature.

CPU Temperature
Detects and displays the current CPU temperature.

SYS Fan Speed
Detects and displays the current system fan speed.

CPU Fan Speed
Detects and displays the current CPU fan speed.

VCORE
Detects and displays the Vcore CPU voltage.

+3.3V
Detects and displays the 3.3V voltage.

+5V
Detects and displays the 5V voltage.

+12V
Detects and displays the 12V voltage.

Case Open Feature
Enables or disables the case open detection feature.

CPU Configuration

This section is used to configure the CPU.

```
Advanced

CPU Configuration                                    Socket specific CPU Information

▶ Socket 0 CPU Information

CPU Speed                           2001 MHz
64-bit                              Supported

Limit CPUID Maximum                 [Disabled]
Execute Disable Bit                 [Enabled]
Intel Virtualization Technology     [Enabled]

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

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```

Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

Execute Disable Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

Intel® Virtualization Technology

Enables or disables Intel® Virtualization technology.

Socket 0 CPU Information

Display information on the CPU installed on socket 0.

```
Advanced

Socket 0 CPU Information

Intel(R) Celeron(R) CPU J1900 @ 1.99GHz
CPU Signature                   30678
Microcode Patch                 833
Max CPU Speed                   1990 MHz
Min CPU Speed                   1334 MHz
Processor Cores                 4
Intel HT Technology             Not Supported
Intel VT-x Technology           Supported

L1 Data Cache                   24 kB x 4
L1 Code Cache                   32 kB x 4        →←: Select Screen
L2 Cache                        1024 kB x 2      ↑↓: Select Item
L3 Cache                        Not Present      Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Exit
                                                 ESC: Exit

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```

PPM Configuration

This section is used to configure the Processor Power Management (PPM) configuration.

```
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  Advanced

  PPM Configuration                                    Enable/Disable CPU C-State
                                                       report to OS.
  CPU C state Report              [Disabled]
  S0ix                            [Disabled]




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

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```

CPU C State Report
Enables or disables CPU C-State report to OS.

S0ix
Enables or disables CPU S0ix state.

IDE Configuration

This section is used to configure the SATA drives.

```
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  Advanced

  IDE Configuration                                    Enable / Disable Serial ATA

  Serial-ATA (SATA)               [Enabled]
  SATA Test Mode                  [Disabled]

  SATA Mode                       [AHCI Mode]

  Serial-ATA Port 0               [Enabled]
  SATA Port0 HotPlug              [Enabled]

  Serial-ATA Port 1               [Enabled]
  SATA Port1 HotPlug              [Enabled]

  SATA Port0                                           →←: Select Screen
  Not Present                                          ↑↓: Select Item
                                                       Enter: Select
  SATA Port1                                           +/-: Change Opt.
  Not Present                                          F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

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```

Serial-ATA (SATA)
Enables or disables the SATA device.

SATA Test Mode
Enables or disables SATA test mode.

Serial-ATA Port 0 and Serial-ATA Port 1
Enables or disables SATA port 0 and SATA port 1.

SATA Port0 Hotplug and SATA Port1 Hotplug
Enables or disables hotplug support on SATA port 0 and SATA port 1.

SATA Mode
Configures the SATA as IDE or AHCI mode.

IDE   This option configures the Serial ATA drives as Parallel ATA
physical storage device.

AHCI   This option configures the Serial ATA drives to use AHCI
(Advanced Host Controller Interface). AHCI allows the storage
driver to enable the advanced Serial ATA features which will
increase storage performance.

USB Configuration

This section is used to configure the USB.

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Advanced

USB Configuration

USB Module Version   10

USB Devices:
        1 Keyboard, 3 Hubs

Legacy USB Support   [Enabled]
XHCI Hand-off   [Enabled]
EHCI Hand-off   [Disabled]

Enables Legacy USB support.
AUTO option disables legacy
support if no USB devices are
connected. DISABLE option will
keep USB devices available
only for EFI applications.

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

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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.

XHCI Hand-off and EHCI Hand-off

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

Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.

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Main   Advanced   Chipset   Security   Boot   Save & Exit

LVDS Panel Support   [Enabled]
    LVDS Panel Type   [800x600/18-bit/1-ch. . .]

► South Bridge

Enable/Disable LVDS function

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

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LVDS Panel Support

Enables or disables LVDS function.

LVDS Panel Type

Configures the LVDS display resolution.

South Bridge

```
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                    Chipset

 ► Azalia HD Audio                                    Azalia HD Audio Options
 ► USB Configuration
 ► PCI Express Configuration

 High Precision Timer              [Enabled]




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


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```

High Precision Timer

Enables or disables the high precision event timer.

Azalia HD Audio

```
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                    Chipset

 Audio Configuration                                  Control Detection of the
 Audio Controller                 [Enabled]           Azalia device.
   Azalia HDMI Codec              [Enabled]           Disabled = Azalia will be
                                                      unconditionally disabled
                                                      Enabled = Azalia will be
                                                      unconditionally Enabled
                                                      Auto = Azalia will be enabled if
                                                      present, disabled otherwise.


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


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```

Audio Controller

Control detection of the Azalia device.

Disabled   Azalia will be unconditionally disabled.
Enabled   Azalia will be unconditionally enabled.

Azalia HDMI Codec

Enables or disables internal HDMI codec for Azalia.

USB Configuration

Chipset		
USB Configuration		Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.
XHCI Mode	[Disabled]	
USB 2.0(EHCI) Support	[Enabled]	
USB EHCI debug	[Disabled]	

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

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USB 2.0(EHCI) Support
Enables or disables the Enhanced Host Controller Interface (USB 2.0), one EHCI controller must always be enabled.

USB EHCI Debug
Enables or disables PCH EHCI debug capability.

PCI Express Configuration

Chipset		
PCI Express Configuration		Enable or Disable the PCI Express Port 0 in the Chipset.
PCI Express Port 0	[Enabled]	
PCI Express Port 1	[Enabled]	
PCI Express Port 2	[Enabled]	
PCI Express Port 3	[Enabled]	

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

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PCI Express Port 0 to PCI Express Port 3
Enables or disables the PCI Express ports 0 to 3 on the chipset.

NEXCOM

Security

Main	Advanced	Chipset	Security	Boot	Save & Exit

```
Password Description                                    Set Administrator Password

If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to
boot or enter Setup. In Setup the User Will
have Administrator rights.
The password length must be
in the following range:
Minimum length              3
Maximum length              20
                                                        →←: Select Screen
                                                        ↑↓: Select Item
Administrator Password                                  Enter: Select
User Password                                           +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit
```

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Administrator Password
Select this to reconfigure the administrator's password.

User Password
Select this to reconfigure the user's password.

Boot

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Main	Advanced	Chipset	Security	Boot	Save & Exit

```
Boot Configuration                                      Select the keyboard NumLock
Bootup NumLock State          [On]                      state
Fast Boot                     [Enabled]

Onboard LAN PXE               [Disabled]

Boot Option Priorities



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

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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.

Fast Boot
When enabled, the BIOS will shorten or skip some check items during POST.

Onboard LAN PXE
Enables or disables onboard LAN PXE ROM for LAN1 or LAN2.

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

Save & Exit

```
            Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.
   Main       Advanced    Chipset    Security    Boot      Save & Exit

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

   Restore Defaults




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


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```

Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

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.

Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

APPENDIX A: POWER CONSUMPTION

Chipset \ Voltage — Net Name	12V +12VSB	12V +12V	5V +5VSB	3.3V +3VSB	1V +1VSB	1.8V +1V8VSB	5V +5V	3.3V +3V3	1.05V +1V05
Bay Trail				0.055	0.41	0.065		0.043	1.3
DDR3L x2									
ALC886							0.5	0.5	
Audio AMP							0.2		
RTL8111G x2								0.7	
SATA x2		1.2					1.5		
USB(3.0) x4							3.6		
FAN		1.34							
Mini-PCIe				1.1					
mSATA								0.7	
USB(2.0) x6							3		
HDMI							0.5		
PCIe Slot		0.5		0.375				3	
VGA							0.5		
CH7511B								0.1	
CCFL (LVDS)		1.2					1.5	1.5	
COM Port (RS-232/422/485*2 RS-232*3)		2.5	0.5				2.5		
SIO(NCT6106D)				0.1				0.2	
GPIO		1					1		
TPM								0.5	
USB 3.0 Hub (ASM1074)								0.3	0.4
USB 2.0 Hub (GL850G)							0.18	0.18	
PS/2 KB & MS							0.55		
Total Current	0	7.74	0.5	1.63	0.41	0.065	15.53	7.723	1.7
Total Watt	0	92.88	2.5	5.379	0.41	0.117	77.65	25.4859	1.785

Voltage / Chipset	1.35V VDDQ	1V +1V	1.35V +1V35	1.5V +1V5	1.8V +1V8	0.675 VTT_DDR	1V VCORE	1V VGFX	Subtotal Power
Bay Trail	1.3	3.6	0.4	0.1	0.01		11	14	
DDR3L x2	4.1					1.2			
ALC886				0.036					
Audio AMP									
RTL8111G x2									
SATA x2									
USB(3.0) x4									
FAN									
Mini-PCIe				0.5					
mSATA				0.5					
USB(2.0) x6									
HDMI									
PCIe Slot									
VGA									
CH7511B					0.26				
CCFL (LVDS)									
COM Port (RS-232/422/485*2 RS-232*3)									
SIO(NCT6106D)									
GPIO									
TPM									
USB 3.0 Hub (ASM1074)									
USB 2.0 Hub (GL850G)									
PS/2 KB & MS									
Total Current	5.4	3.6	0.4	1.136	0.27	1.2	11	14	
Total Watt	7.29	3.6	0.54	1.704	0.486	0.81	11	14	245.6369

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