NEXCOM International Co., Ltd.

Intelligent Platform & Services Business Unit

PICMG Single Board Computer (PICMG 1.3)
PEAK 888
User Manual

Contents

Chapter 3: BIOS Setup

PREFACE

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Acknowledgements

PEAK 888 is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

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

Declaration of Conformity

FCC

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

CE

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 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 PEAK 888 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	60233SIO03X00	USB Cable CONNTEK:A02-B001-V01	USB CONx2 + Bracket to JST 6-pin 2.5mm	1
2	60233PRT15X00	Cable CONNTEK:A02-C016-V01	Print 25 to 2.0mm 26-pin PIT:1.0mm L:260mm w/Bracket	1
3	60233ATA73X00	SATA Cable ACMELUX:19922413	Standard L:300mm	1
4	603PS20001X00	PS2 Y Cable CONNTEK:A02-A052-V01	PS2 to JST 6P PH:2.0 L=250mm	1
5	60177A0523X00	PEAK 888 Quick Reference Guide VER:A		1
6	602DCD1179X00	PEAK 888 DVD Driver VER:1.0		1

Optional Accessories

Item	Part Number	Name	Description
1	60233DVI32X00	DVI Cable ST:MD-6301035	DVI 24+5P/F + Bracket to DF13 2x15P PH:1.25 L:250mm
2	60233HDM01X00	HDMI Cable CONNTEK:A02-A039_V24	HDMI 19P/F + Bracket to DF13 2x15P PH:1.25 L:250mm
3	603USB0006X00	USB 3.0 Cable ST:13-450-E007	USB A/Fx2 to 2x10P L=380mm
4	10E000TPM00X0	EBK-TPM-1.2	TPM SLB9660TT1.2 FW 4.40
5	10E000TPM01X0	EBK-TPM-2.0	TPM SLB9665TT2.0 FW 5.51
6	5010120002X00	SATA M2 Transfer Bracket for PEAK 888	33x22x1mm SPCC T=1.0mm NI
7	5050200022X00	LGA115X CPU Cooler COOLJAG	128.96×128.96×61.4mm AL6063+Copper 1100 FAN 4500RPM L:200mm
8	6030000197X00	DP Cable	PIT:1.25mm L=200mm w/Bracket x1

Ordering Information

The following information below provides ordering information for PEAK 888.

PEAK 888VL2-Q (P/N: 10P00088801X0)

PICMG 1.3 Full-size SBC, Q170, Intel® LGA1151, DDR4 DIMM, VGA x1,
LAN x2, USB 3.0 x4, SATA 3.0 x5

PEAK 888VL2-H (P/N: 10P00088800X0)

PICMG 1.3 Full-size SBC, H110, Intel® LGA1151, DDR4 DIMM, VGA x1,
LAN x2, USB 3.0 x4, SATA 3.0 x3

CHAPTER 1: PRODUCT INTRODUCTION

Overview
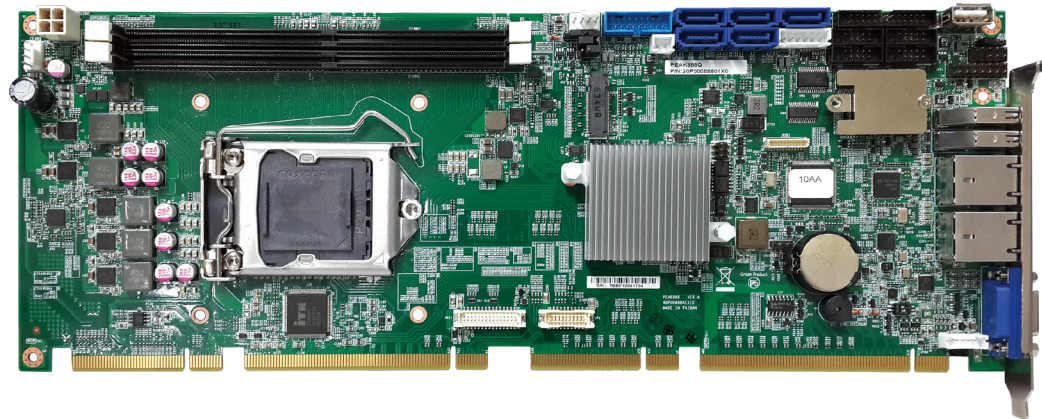
Key Features

- Support 6th generation Intel® Core™ i7/i5/i3 processor

- Support Intel® Q170/H110 PCH chipset PICMG 1.3 specification

- Support dual channel DDR4 with non-ECC DIMMs 1866/2133MHz up to 32GB

- Support PCIe 3.0 SATA 3.0 w/RAID 0, 1, 5, 10, M.2 NVMe

- Support display for VGA, DVI/HDMI, DP

- Support Intel® AMT 11 & TPM 1.2/2.0 (optional)

Hardware Specifications

CPU Support

- 6th generation Intel® Core™ i7/i5/i3 processor (65W/35W) TDPs, socket LGA1151

Main Memory

- 2x DIMM, support dual channel DDR4 non-ECC DIMM 1866/2133 MT/S (Maximum 32GB)

Platform Control Hub

- Intel® H110 Express Chipset PCH
- Intel® Q170 Express Chipset PCH

BIOS

- AMI system BIOS
- 16MBit SPI depended on AMT function
- Dual BIOS for four PCIe x1 and one PCIe x4

Display

- The Processor Graphics contains a refresh of the ninth generation graphics
- Intel® HD Graphics 530
- Support independent triple display
- VGA: Resolution up to 1920*1200 pixels @60MHz
- DVI: Resolution up to 1920*1200 pixels @60MHz
- HDMI: Resolution up to 4096*2304 pixels @60MHz
- DP: Resolution up to 4096*2304 pixels @60MHz
  - * Supporting 4K display requires two DDR channels of same size

Audio

- High definition audio interface (Compatible with NEXCOM audio daughter board P/N: 10E000HDA00X0 EBK-HAD)

Onboard LAN

- 1x Intel® WG1219LM GbE PHY (PEAK 888Q supports Intel® AMT 11)
- 1x Intel® I211 Gigabit Ethernet Controller
- RJ45 with LED connecter x 2
- Support Boot from LAN (PXE)
- Support Wake on LAN

I/O Interface

- 1x PCI Express x16 and 1 PCI Express x4 to backplane
- 4x PCI to backplane
- SATA port
  PEAK 888VL2-H
  - 3x SATA 3.0 Port (2x SATA 3.0 to BP through BIOS setting)
  - 1x M.2 2280/22110 M Key (SATA 3.0)
  PEAK 888VL2-Q
  - 5x SATA 3.0 port (2x SATA 3.0 to BP through BIOS setting)
  - 1x M.2 2280/22110 M Key (NVMe Gen 3 PCIe x4)
  - Support RAID 0/1/5/10
  - SIO: ITE8786, COM 1, 3, 4 support RS232, COM2 supports RS232/422/485 and can be selected RI/5V/12V through jumper
  - PS2 KB/MS *1 JST connector
  - Parallel Port: 26-pin box header x 1

- – 6 ports USB 2.0 and 4 ports USB 3.0
  2 port USB 2.0 header/2 port USB 3.0 header
  1 port USB 2.0 Type A (PEAK 888VL2-Q only)
  4 ports USB 2.0 through backplane
  2 ports USB 3.0 through I/O bracket
- – 2*10 pin header to support TPM module
- – 2x Smart FAN connector (for CPU, system)
- – Onboard buzzer
- – Watchdog time out can be programmed by software from 1 second to 255 seconds

Power Requirements

- ▪ Power source from backplane through golden finger and AUX +12V
- ▪ Support ATX/AT function by jumper setting
- ▪ BIOS default is (ATX MODE)

Dimensions

- ▪ 338.58mm x 126.39mm, 8 layers (single side)

Environment

- ▪ Board level operating temperatures: -20°C to 60°C
- ▪ Storage temperatures: -20°C to 85°C
- ▪ Relative humidity:
  0% to 90% (operating, non-condensing)
  0% to 95% (non-operating, non-condensing)

Certifications

- ▪ CE/ FCC Class A compliant

Knowing Your PEAK 888

ATX/AT Select

USB 2.0 Header   USB 2.0 Connector

USB 3.0 Box Header   SATA x 5

COM Box
Header x 4

ATX-4P   M.2 Socket   SYS Fan   SATA PWR

LPT

CPU Fan

RI Select
HDA
PWR/Reset/HDD LED

USB 3.0

LAN

VGA

DVI/HDMI   DisplayPort   Debug Port   CMOS Clear   DIP Switch   K/B & MS

Knowing Your PEAK 888VL2-H

ATX/AT Select

USB 2.0 Header

USB 3.0 Box Header   SATA x 3

COM Box
Header x 4

ATX-4P   M.2 Socket   SYS Fan   SATA PWR

LPT

CPU Fan

RI Select
HDA
PWR/Reset/HDD LED

USB 3.0

LAN

VGA

DVI/HDMI   DisplayPort   Debug Port

CMOS Clear

DIP Switch   K/B & MS

CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the PEAK 888 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.

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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)
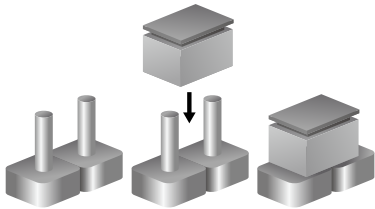
Three-Pin Jumpers: Pins 1 and 2 are Short
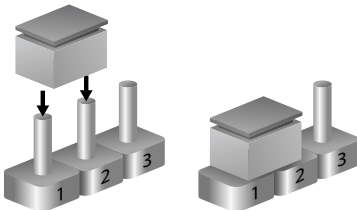
Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors for PEAK 888.
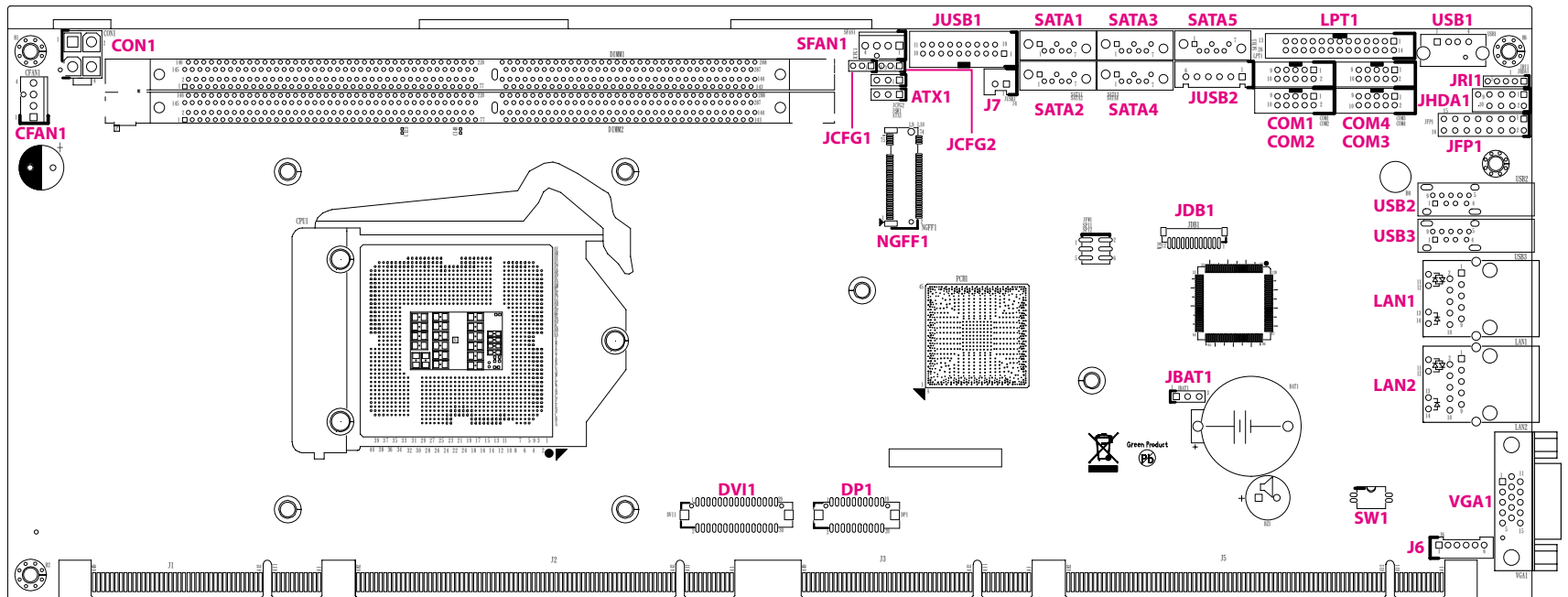
Jumpers

CMOS Clear Select

Connector type: 1x3 3-pin header
Connector location: JBAT1

1 ☐ ○ ○ 3

Pin	Settings
1-2 On	Normal
2-3 On	Clear BIOS Setting

1-2 On: default

AT/ATX Select

Connector type: 1x3 3-pin header
Connector location: ATX1

1 ☐ ○ ○ 3

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

1-2 On: default

PCIe x16 Select

Connector type: 1x3 3-pin header
Connector location: JCFG1

1 ▢ ○ ○ 3
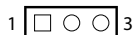
Pin	Settings
1-2 On	1(CFG1)
2-3 On	0

1-2 On: default

Pin	Definition
1	VCCIO
2	CPU_CFG6_C
3	GND

PCIe x16 Select

Connector type: 1x3 3-pin header
Connector location: JCFG2

1 ▢ ○ ○ 3
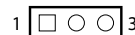
Pin	Settings
1-2 On	1(CFG5)
2-3 On	0

1-2 On: default

Pin	Definition
1	VCCIO
2	CPU_CFG5_C
3	GND

RI Select

Connector type: 1x5 5-pin header
Connector location: JRI1

1 | □ ○ ○ ○ ○ | 5
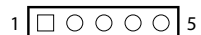
Pin	Settings
1-2 On	VCC5
2-3 On	+12V
2-3 On	+12V
4-5 On	RI

4-5 On: default

Pin	Definition
1	VCC5
2	COM1_RI#_T
3	VCC12
4	COM1_RI#_T
5	COM1_RI#

Connector Pin Definitions

External Connectors

VGA Port

Connector type: DB-15 port, 15-pin D-Sub
Connector location: VGA1

LAN1 Port

Connector type: RJ45 port with LEDs
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
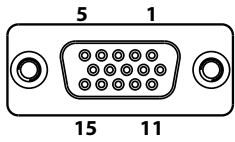
Pin	Definition	Pin	Definition
1	RED_VGA	2	GREEN_VGA
3	BLUE_VGA	4	NC
5	GND	6	GND
7	GND	8	GND
9	VGA_+5V	10	GND
11	NC	12	DDC_DATA_VGA
13	HSYNC_VGA	14	VSYNC_VGA
15	DDC_CLK_VGA	MH1	CHASSIS_GND
MH2	CHASSIS_GND		
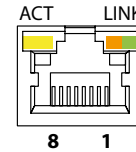
Pin	Definition	Pin	Definition
1	LAN2_MDI0P	2	LAN2_MDI0N
3	LAN2_MDI1P	4	LAN2_MDI1N
5	AVDD12_PHY2	6	LAN2TCTG
7	LAN2_MDI2P	8	LAN2_MDI2N
9	LAN2_MDI3P	10	LAN2_MDI3N
11	LAN2_LINK1G#	12	LAN2_LINK100#
13	LAN2_LED_ACT#	14	V_3P3_LAN
MH1	CHASSIS_GND	MH2	CHASSIS_GND

LAN2 Port

Connector type: RJ45 port with LEDs
Connector location: LAN2
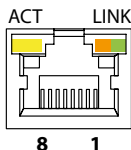
Act	Status
Flashing Yellow	Data activity
Off	No activity

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

Pin	Definition	Pin	Definition
1	MDI_PLUS0_C_0	2	MDI_MINUS0_C_0
3	MDI_PLUS1_C_0	4	MDI_MINUS1_C_0
5	TCT_0	6	TCTG_0
7	MDI_PLUS2_C_0	8	MDI_MINUS2_C_0
9	MDI_PLUS3_C_0	10	MDI_MINUS3_C_0
11	LAN0_LED2+	12	LED2_100#_C_0
13	LED0_ACT_C_0	14	LAN0_LED1+
MH1	CHASSIS_GND	MH2	CHASSIS_GND

USB 3.0 Ports

Connector type: USB 3.0 port, Type A
Connector location: USB2 and USB3
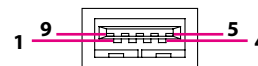
USB2

Pin	Definition	Pin	Definition
1	P5V_OC01_C	2	USB_1N_C
3	USB_1P_C	4	GND
5	USB3_RX2_N_C	6	USB3_RX2_P_C
7	GND	8	USB3_TX2_N_C
9	USB3_TX2_P_C	MH1	CHASSIS_GND
MH2	CHASSIS_GND	MH3	CHASSIS_GND
MH4	CHASSIS_GND		

USB3

Pin	Definition	Pin	Definition
1	P5V_OC01_C	2	USB_0N_C
3	USB_0P_C	4	GND
5	USB3_RX1_N_C	6	USB3_RX1_P_C
7	GND	8	USB3_TX1_N_C
9	USB3_TX1_P_C	MH1	CHASIS_GND
MH2	CHASIS_GND	MH3	CHASIS_GND
MH4	CHASIS_GND		

Internal Connectors

Power Input Connector

Connector type: 2x2 4-pin header, 4.2mm pitch
Connector location: CON1
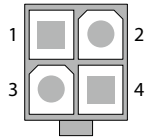
Pin	Definition	Pin	Definition
1	GND	2	GND
3	+12V	4	+12V

CPU Fan Connector

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: CFAN1
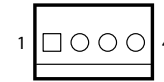
Pin	Definition	Pin	Definition
1	GND	2	+12V
3	FAN TAC	4	FAN CTL

System Fan Connector

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: SFAN1
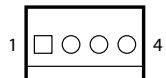
Pin	Definition	Pin	Definition
1	GND	2	+12V
3	FAN TAC	4	FAN CTL

Power On/Off/Reset & PWR/HDD LED Pin Header

Connector type: 2x8 16-pin header, 2.54mm pitch
Connector location: JFP1
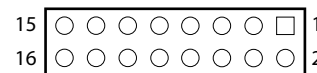
Pin	Definition	Pin	Definition
1	SATA_LED_P	2	PWR_LED_P
3	SATA_LED#	4	GND
5	GND	6	PWRBT_N
7	RST_BTN#	8	GND
9	SPKR_OUT	10	SMB_CLK_MAIN
11	NC	12	SMB_DATA_MAIN
13	NC	14	S1_SYSTIN
15	SPKR_IN	16	HW_AGND

Debug Port

Connector type: 1x12 12-pin header, 1.0mm pitch
Connector location: JDB1

Pin	Definition	Pin	Definition
1	LPC_SERIRQ	2	NC
3	GND	4	RST_SIO_N
5	CLK_PCI_P80	6	LPC_FRAME#
7	LPC_AD3	8	LPC_AD2
9	LPC_AD1	10	LPC_AD0
11	VCC3	12	VCC3
MH1	GND	MH2	GND

COM1 RS232 Box Header Connector

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: COM1
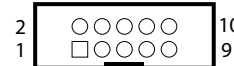
Pin	Definition	Pin	Definition
1	COM_DCD#1	2	COM_RXD1
3	COM_TXD1	4	COM_DTR#1
5	GND	6	COM_DSR#1
7	COM_RTS#1	8	COM_CTS#1
9	COM_RI#1	10	GND

COM2 RS232/422/485 Box Header Connector

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: COM2
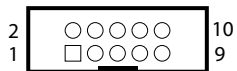
Pin	Definition	Pin	Definition
1	COM_DCD#2	2	COM_RXD2
3	COM_TXD2	4	COM_DTR#2
5	GND	6	COM_DSR#2
7	COM_RTS#2	8	COM_CTS#2
9	COM_RI#2_con	10	GND

COM3 RS232 Box Header Connector

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: COM3
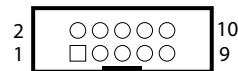
Pin	Definition	Pin	Definition
1	COM_DCD#3	2	COM_RXD3
3	COM_TXD3	4	COM_DTR#3
5	GND	6	COM_DSR#3
7	COM_RTS#3	8	COM_CTS#3
9	COM_RI#3	10	GND

COM4 RS232 Box Header Connector

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: COM4

USB 2.0 Connector

Connector type: 1x6 6-pin header, 2.5mm pitch
Connector location: JUSB2
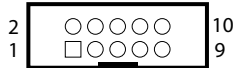
Pin	Definition	Pin	Definition
1	COM_DCD#4	2	COM_RXD4
3	COM_TXD4	4	COM_DTR#4
5	GND	6	COM_DSR#4
7	COM_RTS#4	8	COM_CTS#4
9	COM_RI#4	10	GND
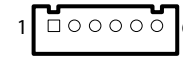
Pin	Definition	Pin	Definition
1	P5V_OC45_C	2	USB4-
3	USB4+	4	USB5-
5	USB5+	6	GND

USB 2.0 Connector

Connector type: 1x4 4-pin header
Connector location: USB1
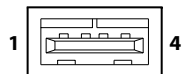
Pin	Definition	Pin	Definition
1	P5V_OC10_C	2	USB10-
3	USB10+	4	GND
MH1	CHASIS_GND	MH2	CHASIS_GND

USB 3.0 Box Header

Connector type: 2x10 20-pin header, 2.0mm pitch
Connector location: JUSB1
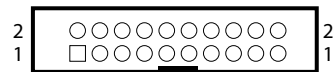
Pin	Definition	Pin	Definition
1	P5V_OC23_C	2	USB3_RX4_N_C
3	USB3_RX4_P_C	4	GND
5	USB3_TX4_N_C	6	USB3_TX4_P_C
7	GND	8	USB_3N_R
9	USB_3P_R	10	NC
11	USB_2P_R	12	USB_2N_R
13	GND	14	USB3_TX3_P_C
15	USB3_TX3_N_C	16	GND
17	USB3_RX3_P_C	18	USB3_RX3_N_C
19	P5V_OC23_C		

HDA Pin Header

Connector type: 2x5 10-pin header, 2.54mm pitch
Connector location: JHDA1

SATA1 Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA1
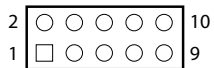
Pin	Definition	Pin	Definition
1	S_HDA_SDO	2	VCC5
3	S_HDA_RST#	4	GND
5	S_HDA_SYNC	6	+12V
7	S_HDA_SDI0	8	S_HDA_SDI1
9	S_HDA_BCLK	10	NC
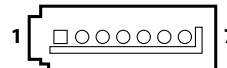
Pin	Definition	Pin	Definition
1	SATA2_SEL	2	R_SATA_TXP2
3	R_SATA_TXN2	4	GND
5	B_SATA_RXN2	6	B_SATA_RXP2
7	GND		

SATA Power Connector

Connector type: 1x2 2-pin header, 2.5mm pitch
Connector location: J7

Pin	Definition
1	VCC5
2	GND

SATA2 Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA2
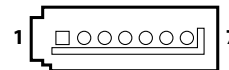
Pin	Definition	Pin	Definition
1	SATA3_SEL	2	R_SATA_TXP0
3	R_SATA_TXN0	4	GND
5	B_SATA_RXN0	6	B_SATA_RXP0
7	GND		

SATA3 Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA3
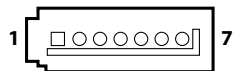
Pin	Definition	Pin	Definition
1	GND	2	R_SATA_TXP0
3	R_SATA_TXN0	4	GND
5	B_SATA_RXN0	6	B_SATA_RXP0
7	GND		

SATA4 Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA4
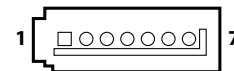
Pin	Definition	Pin	Definition
1	GND	2	R_SATA_TXP4
3	R_SATA_TXN4	4	GND
5	B_SATA_RXN4	6	B_SATA_RXP4
7	GND		

SATA5 Connector

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA5

Keyboard and Mouse Pin Header

Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J6
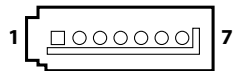
Pin	Definition	Pin	Definition
1	GND	2	R_SATA_TXP5
3	R_SATA_TXN5	4	GND
5	B_SATA_RXN5	6	B_SATA_RXP5
7	GND		
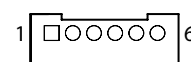
Pin	Definition	Pin	Definition
1	K/M_VCC	2	LKBDAT
3	LKBCLK	4	LMDAT
5	LMCLK	6	GND_BLK

DVI/HDMI Pin Header

Connector type: 2x15 30-pin header, 1.25mm pitch
Connector location: DVI1

Printer Port

Connector type: 2x13 26-pin header, 2.0mm pitch
Connector location: LPT1
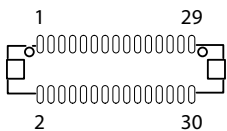
Pin	Definition	Pin	Definition
1	DPC_L0_P_R	2	HDMIC_PWR_R
3	DPC_L0_N_R	4	HDMIC_PWR_R
5	GND	6	NC
7	DPC_L1_P_R	8	NC
9	DPC_L1_N_R	10	HDMI_DIS
11	GND	12	HDMI_CTRL_CLK
13	DPC_L2_P_R	14	GND
15	DPC_L2_N_R	16	HDMI_CTRL_DATA
17	GND	18	GND
19	DPC_L3_P_R	20	GND
21	DPC_L3_N_R	22	GND
23	GND	24	HDMI_HPD
25	NC	26	GND
27	NC	28	NC
29	DVI_GND	30	DVI_GND
MH1	DVI_GND	MH2	DVI_GND
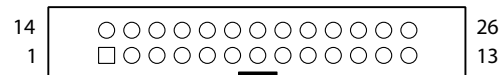
Pin	Definition	Pin	Definition
1	RPSTB	2	RPSTB0
3	RPSTB1	4	RPSTB2
5	RPSTB3	6	RPSTB4
7	RPSTB5	8	RPSTB6
9	RPSTB7	10	S1_LPTACK#
11	S1_LPTBUSY	12	S1_LPTPE
13	S1_LPTSLCT	14	S1_LPTAFD#
15	S1_LPTERR#	16	S1_LPTINIT#
17	S1_LPTSLIN#	18	GND_P1
19	GND_P1	20	GND_P1
21	GND_P1	22	GND_P1
23	GND_P1	24	GND_P1
25	GND_P1	26	NC

Switch 1

Connector type: 1x2 2-pin DIP switch
Connector location: SW1
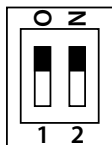
Switch	Status	Description
SW1.1	OFF	Control by SW1.2
SW1.2	ON	PCIe x1
SW1.2	OFF	PCIe x4

Default setting: PCIe x4

SW1.1: OFF

SW1.2: OFF

Pin	Definition	Pin	Definition
1	CB_CFG3	2	CB_CFG3
3	GND	4	CBCFG3

DisplayPort Connector

Connector type: 2x10 20-pin header, 1.25mm pitch
Connector location: DP1
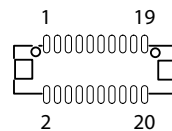
Pin	Definition	Pin	Definition
1	DPD_PWR_R	2	DPD_PWR_R
3	GND	4	GND
5	DDI3_TXN_R1	6	DDI3_TXN_R3
7	DDI3_TXP_R1	8	DDI3_TXP_R3
9	GND	10	GND
11	DDI3_TXN_R0	12	DDI3_TXN_R2
13	DDI3_TXP_R0	14	DDI3_TXP_R2
15	GND	16	GND
17	DPD_AUX_P_R	18	DPD_HPD_R
19	DPD_AUX_N_R	20	DP_GND
MH1	DP_GND	MH2	DP_GND

M.2 Connector

Connector location: NGFF1
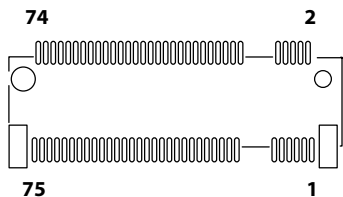
Pin	Definition	Pin	Definition
1	GND	2	NGFF1_3V3
3	GND	4	NGFF1_3V3
5	PERN3	6	NC
7	PERP3	8	NC
9	GND	10	NC
11	PETN3	12	NGFF1_3V3
13	PETP3	14	NGFF1_3V3
15	GND	16	NGFF1_3V3
17	PERN2	18	NGFF1_3V3
19	PERP2	20	NC
21	GND	22	NC
23	PETN2	24	NC
25	PETP2	26	NC
27	GND	28	NC
29	PERN1	30	NC
31	PERP1	32	NC
33	GND	34	NC
35	PETN1	36	NC
37	PETP1	38	NC
39	GND	40	NC

Pin	Definition	Pin	Definition
41	PERN0	42	NC
43	PERP0	44	NC
45	GND	46	NC
47	PETN0	48	NC
49	PETP0	50	RST_M2M_N
51	GND	52	PCIEREQ#1_NGFF_R
53	REFCLKN	54	NC
55	REFCLKP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	NC
69	SATA_PCIE_SEL	70	NGFF1_3V3
71	GND	72	NGFF1_3V3
73	GND	74	NGFF1_3V3
75	GND		
MH1	GND	MH2	GND
NH1	NC	NH2	NC

Block Diagram
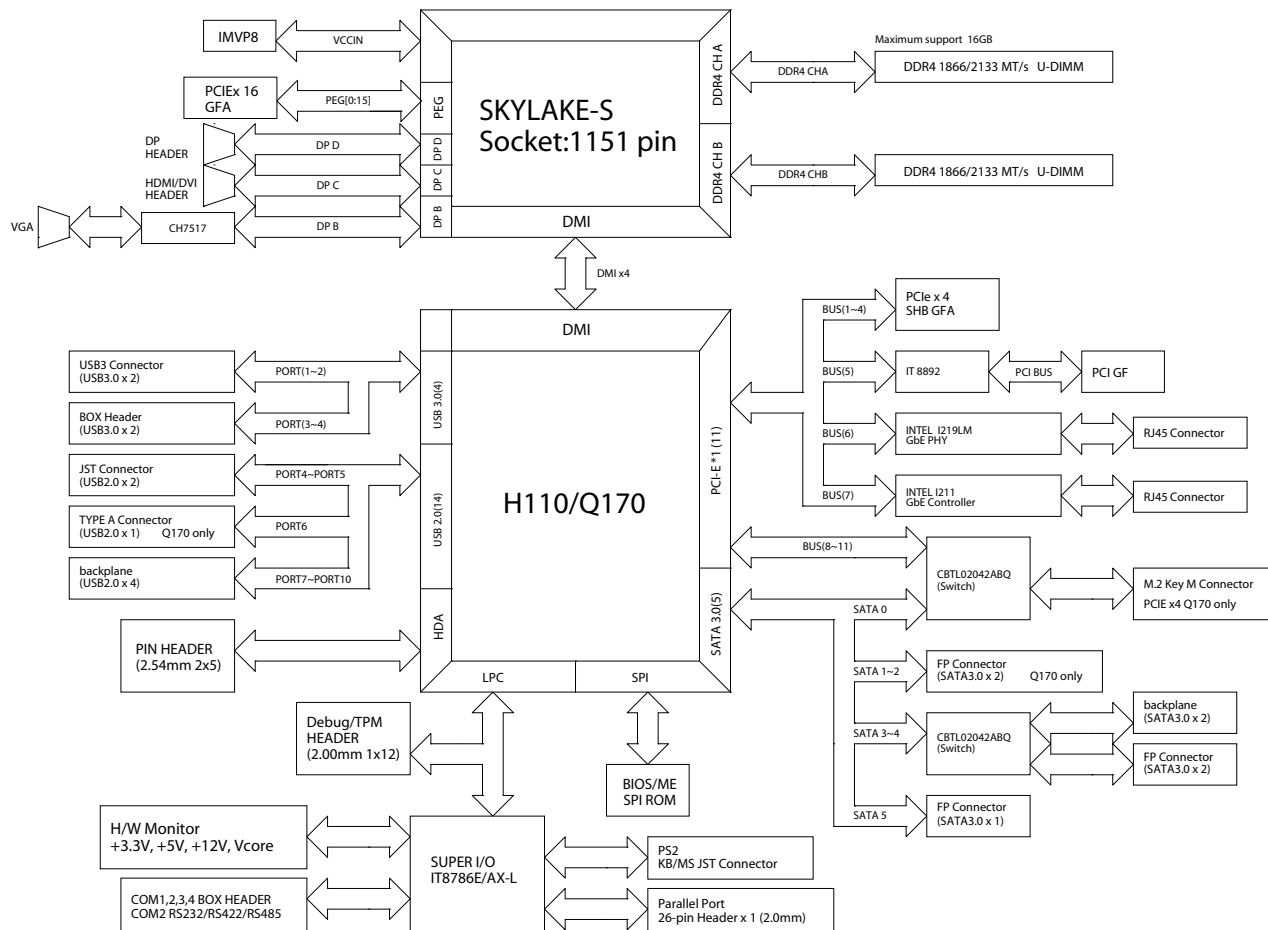
CHAPTER 3: BIOS SETUP

This chapter describes how to use the BIOS setup program for the PEAK 888. 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 <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.

```
                Aptio Setup Utility - Copyright (C) 2016 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              5.11
   Compliancy                UEFI 2.4; PI 1.3
   Project Name              PEAK888
   Project Version           P888-007 x64
   Build Date and Time       06/23/2016 23:04:25
   Access Level              Administrator

   Processor Information
   Name                      SkyLake DT
   Brand String              Intel(R) Core(TM)
                             i5-6500 CPU @ 3.20GHz
   Frequency                 3200 MHz
   Processor ID              506E3
   Stepping                  R0/S0/N0                           →←: Select Screen
   Number of Processors      4Core(s) / 4Thread(s)              ↑↓: Select Item
   Microcode Revision        6A                                 Enter: Select
   GT Info                   GT2                                +/-: Change Opt.
                                                                F1: General Help
   IGFX VBIOS Version        1036                               F2: Previous Values
   Memory RC Version         1.8.0.1                            F3: Optimized Defaults
   Total Memory              8192 MB                            F4: Save & Exit
   Memory Frequency          2133 MHz                           ESC: Exit

                Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
   Main      Advanced     Chipset     Security      Boot      Save & Exit

   Frequency                 3200 MHz                           Set the Date. Use Tab to switch
   Processor ID              506E3                              between Date elements.
   Stepping                  R0/S0/N0
   Number of Processors      4Core(s) / 4Thread(s)
   Microcode Revision        6A
   GT Info                   GT2

   IGFX VBIOS Version        1036
   Memory RC Version         1.8.0.1
   Total Memory              8192 MB
   Memory Frequency          2133 MHz

   PCH Information
   Name                      SKL PCH-H
   PCH SKU                   PCH-H Desktop Q170 SKU             →←: Select Screen
   Stepping                  31/D1                              ↑↓: Select Item
   LAN PHY Revision          B2                                 Enter: Select
                                                                +/-: Change Opt.
   ME FW Version             11.0.0.1194                        F1: General Help
   ME Firmware SKU           Corporate SKU                      F2: Previous Values
                                                                F3: Optimized Defaults
   System Language           [English]                          F4: Save & Exit
                                                                ESC: Exit
   System Date               [Thu 07/21/2016]
   System Time               [16:01:23]

                Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

System Language
Selects the language of the system.

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.

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) 2016 American Megatrends, Inc.	
Main **Advanced** **Chipset** **Security** **Boot** **Save & Exit**	
▶ **Trusted Computing**	Trusted Computing Settings
▶ **ACPI Settings**	
▶ **IT8786 Super IO Configuration**	
▶ **Hardware Monitor**	
▶ **CPU Configuration**	
▶ **SATA 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
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.	

Trusted Computing

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

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.	
Advanced	
Configuration	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.
Security Device Support [Enable]	
NO Security Device Found	
	→←: Select Screen
	↑↓: Select Item
	Enter: Select
	+/-: Change Opt.
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
	ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.	

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.

ACPI Settings

This section is used to configure ACPI settings.

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.	
Advanced	

ACPI Settings

Enable Hibernation   [Enabled]
ACPI Sleep State   [S3 (Suspend to RAM)]

Right panel:
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not 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 be not 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).

IT8786 Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.	
Advanced	

IT8786 Super IO Configuration

Super IO Chip   IT8786
▶ Serial Port 1 Configuration
▶ Serial Port 2 Configuration
▶ Serial Port 3 Configuration
▶ Serial Port 4 Configuration
▶ Parallel Port Configuration

Right panel:
Set Parameters of Serial Port 1 (COMA)

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

Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.

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) 2016 American Megatrends, Inc.
 Advanced

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




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


         Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

Serial Port
Enables or disables the serial port.

Serial Port 2 Configuration

This section is used to configure serial port 2.

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
 Advanced

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

 Onboard Serial Port Mode         [RS232]
 Terminal 120 Ohm                 [Disabled]




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


         Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

Serial Port
Enables or disables the serial port.

Onboard Serial Port Mode
Configures the serial port mode to RS232, RS422, RS485 or RS485 Auto.

Terminal 120 Ohm
Enables or disables serial port terminal resistance.

Serial Port 3 Configuration

This section is used to configure serial port 3.

```
         Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced

  Serial Port 3 Configuration                          Enable or Disable Serial Port
                                                       (COM)
  Serial Port                     [Enabled]
  Device Settings                 IO=3E8h; IRQ=6;




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


         Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```
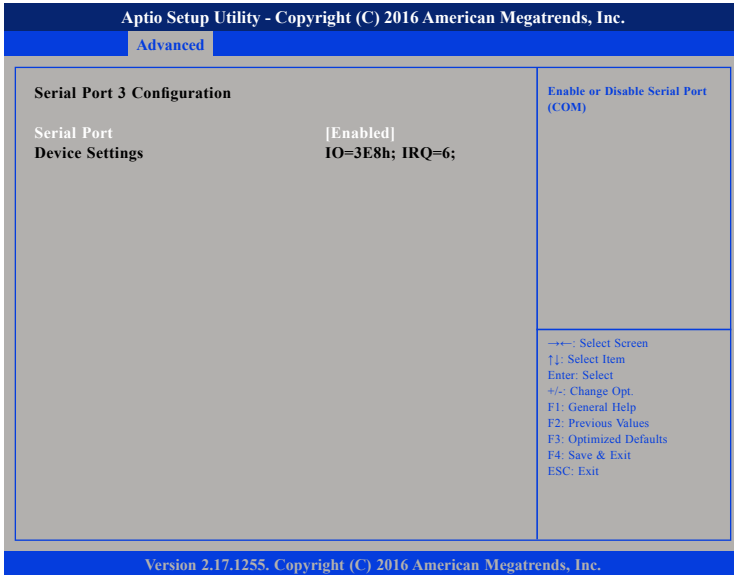
Serial Port
Enables or disables the serial port.

Serial Port 4 Configuration

This section is used to configure serial port 4.

```
         Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced

  Serial Port 4 Configuration                          Enable or Disable Serial Port
                                                       (COM)
  Serial Port                     [Enabled]
  Device Settings                 IO=2E8h; IRQ=10;




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


         Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

Serial Port
Enables or disables the serial port.

Parallel Port Configuration

This section is used to configure the parallel port.

```
         Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
   Advanced

   Parallel Port Configuration                          Enable or Disable Parallel Port
                                                        (LPT/LPTE)
   Parallel Port                    [Enabled]
   Device Settings                  IO=378h; IRQ=5; DMA=3;

   Change Settings                  [Auto]
   Device Mode                      [EPP mode & ECP 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 an optimal setting for the Super IO device.

Device Mode

Configures the operating mode of the parallel port. The options are Standard Parallel Port Mode, EPP Mode, ECP Mode, EPP Mode & ECP Mode.

Hardware Monitor

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

```
           Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
          Advanced

   Pc Health Status

   System Temperature              : +31 C
   CPU Temperature                 : +38 C
   CPU Fan Speed                   : N/A
   SYS Fan Speed                   : 4299 RPM
   CPU:Vcore                       : +1.080
   +3V                             : +3.363 V
   +12V                            : +11.880 V
   +5V                             : +5.070 V


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




           Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

System Temperature
Detects and displays the current system temperature.

CPU Temperature
Detects and displays the current CPU temperature.

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

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

CPU:Vcore
Detects and displays the Vcore CPU voltage.

+3V
Detects and displays 3.3V voltage.

+12V
Detects and displays 12V voltage.

+5V
Detects and displays 5V voltage.

CPU Configuration

This section is used to configure the CPU.

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
 Advanced

 Intel(R) Core(TM) i5-6500 CPU @ 3.20GHz
 CPU Signature                506E3
 Microcode Patch              6A
 Max CPU Speed                3200 MHz
 Min CPU Speed                800 MHz
 CPU Speed                    3200 MHz
 Processor Cores              4
 Hyper Threading Technology   Not Supported
 Intel VT-x Technology        Supported
 Intel SMX Technology         Supported
 64-bit                       Supported
 EIST Technology              Supported
 CPU C3 state                 Supported
 CPU C6 state                 Supported          →←: Select Screen
 CPU C7 state                 Supported          ↑↓: Select Item
 CPU C8 state                 Supported          Enter: Select
 CPU C9 state                 Not Supported      +/-: Change Opt.
 CPU C10 state                Not Supported      F1: General Help
                                                 F2: Previous Values
 L1 Data Cache                32 kB x 4          F3: Optimized Defaults
 L1 Code Cache                32 kB x 4          F4: Save & Exit
                                                 ESC: Exit

 Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
 Advanced

 Processor Cores              4                  Select the number of cores to
 Hyper Threading Technology   Not Supported      enable in each processor package.
 Intel VT-x Technology        Supported
 Intel SMX Technology         Supported
 64-bit                       Supported
 EIST Technology              Supported
 CPU C3 state                 Supported
 CPU C6 state                 Supported
 CPU C7 state                 Supported
 CPU C8 state                 Supported
 CPU C9 state                 Not Supported
 CPU C10 state                Not Supported

 L1 Data Cache                32 kB x 4          →←: Select Screen
 L1 Code Cache                32 kB x 4          ↑↓: Select Item
 L2 Cache                     256 kB x 4         Enter: Select
 L3 Cache                     6 MB               +/-: Change Opt.
 L4 Cache                     Not Present        F1: General Help
                                                 F2: Previous Values
 Active Processor Cores       [All]              F3: Optimized Defaults
 Intel Virtualization Technology  [Enabled]      F4: Save & Exit
 Intel(R) SpeedStep(tm)       [Disabled]         ESC: Exit
 CPU C states                 [Disabled]

 Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

Active Processor Cores
Select the number of cores to enable in each processor package.

Intel® Virtualization Technology
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

EIST
Enables or disables Intel® SpeedStep.

CPU C States
Enable CPU C States Support for power saving.

SATA Configuration

This section is used to configure the SATA drives.

```
          Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
            Advanced

  SATA Controller(s)                [Enabled]          Enable or disable SATA Device.
  SATA Mode Selection               [AHCI]
  ▶ Software Feature Mask Configuration

  Serial ATA Port 0                 Empty
    Software Preserve               Unknown
    Port 0                            [Enabled]
  Serial ATA Port 1                 Empty
    Software Preserve               Unknown
    Port 1                            [Enabled]
  Serial ATA Port 2                 Empty
    Software Preserve               Unknown
    Port 2                            [Enabled]
  Serial ATA Port 3                 Empty              →←: Select Screen
    Software Preserve               Unknown            ↑↓: Select Item
    Port 3                            [Enabled]         Enter: Select
  Serial ATA Port 4                 Empty              +/-: Change Opt.
    Software Preserve               Unknown            F1: General Help
    Port 4                            [Enabled]         F2: Previous Values
  Serial ATA Port 5                 Empty              F3: Optimized Defaults
    Software Preserve               Unknown            F4: Save & Exit
    Port 5                            [Enabled]         ESC: Exit


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```

SATA Controller(s)

Enables or disables the SATA controller.

SATA Mode Selection

Configures the SATA mode.

RAID   This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices

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.

Port 0 to Port 5

Enables or disables SATA port 0 to port 5.

Software Feature Mask Configuration

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
          Advanced

     RAID0                        [Enabled]
     RAID1                        [Enabled]
     RAID10                       [Enabled]
     RAID5                        [Enabled]


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


                Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```
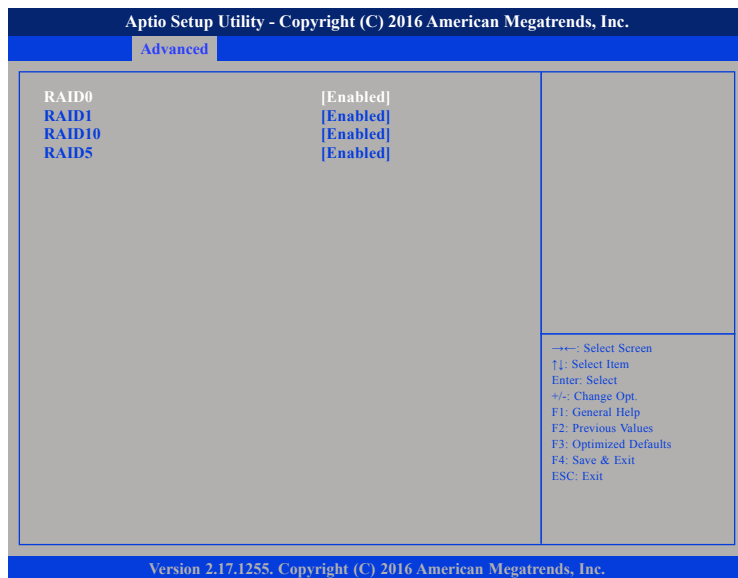
RAID0, RAID1, RAID10 and RAID5
Enables or disables RAID0, RAID1, RAID10 or RAID5 feature.

USB Configuration

This section is used to configure the USB.

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
             Advanced

   USB Configuration                                      Enables Legacy USB support.
                                                          AUTO option disables legacy
                                                          support if no USB devices are
   USB Module Version          13                         connected. DISABLE option will
                                                          keep USB devices available
                                                          only for EFI applications.
   USB Controllers:
       1 XHCI
   USB Devices:
       1 Drive, 2 Keyboards

   Legacy USB Support          [Enabled]
   XHCI Hand-off               [Enabled]
   USB Mass Storage Driver Support   [Enabled]
                                                          →←: Select Screen
   Mass Storage Devices:                                  ↑↓: Select Item
   JetFlashTranscend 16GB 1100    [Auto]                  Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit


                Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

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

USB Mass Storage Driver Support
Enables or disables USB mass storage driver support.

Chipset

This section is used to configure the system based on the specific features of the chipset.

```
          Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Main      Advanced     Chipset     Security     Boot     Save & Exit

► System Agent (SA) Configuration
► PCH-IO Configuration

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

          Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```
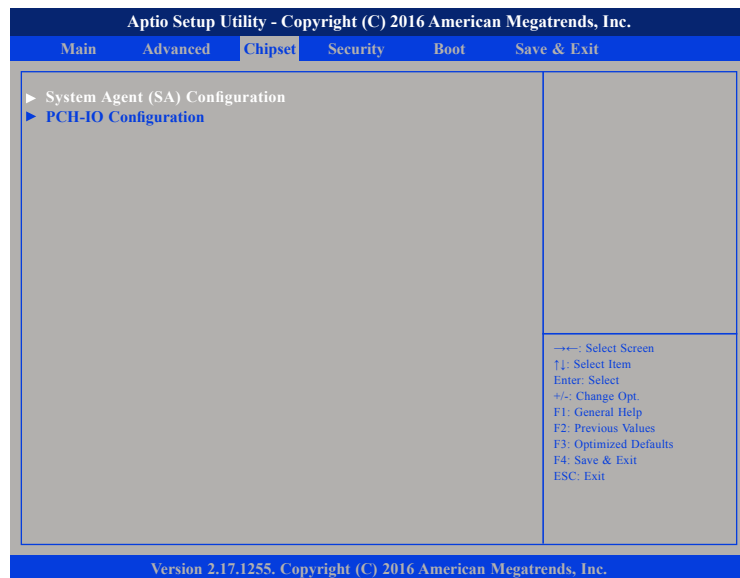
⚠ Setting incorrect field values may cause the system to malfunction.

System Agent (SA) Configuration

```
          Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                                    Chipset

System Agent Bridge Name          Skylake
SA PCIe Code Version              1.8.0.0
VT-d                              Supported

VT-d                              [Enabled]

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

          Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

VT-d
Enables or disables VT-d function on MCH.

Graphics Configuration

```
              Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                             Chipset

   Graphics Configuration                                  Select which of IGFX/PEG/PCI
                                                           Graphics device should be
   IGFX VBIOS Version               1036                   Primary Display Or select SG
                                                           for Switchable Gfx.
   Primary Display                  [Auto]
     Primary PEG                    [Auto]
     Primary PCIE                   [Auto]
   Internal Graphics                [Auto]
   DVMT Total Gfx Mem               [256M]
   ► LCD Control


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



              Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

Primary Display
Select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable GFx.

Primary PEG
Select which PEG device should be the primary PEG.

Primary PCIE
Select which PCIE device should be the primary PCIE.

Internal Graphics
Keep IGD enabled based on the setup options.

DVMT Total Gfx Mem
Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.

LCD Control

```
          Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                    Chipset

  LCD Control                                        Select the Video Device which
                                                     will be activated during POST.
  Primary IGFX Boot Display      [VBIOS Default]     This has no effect if external
                                                     graphics present. Secondary boot
                                                     display selection will appear
                                                     based on your selection.
                                                     VGA modes will be supported
                                                     only on primary display




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


          Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

Primary IGFX Boot Display

Selects the video device which will be activated during POST. This has no effect if external graphics is present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display

PEG Port Configuration

```
          Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                    Chipset

  PEG Port Configuration

  PEG 0:1:0                         Not Present
    Enable Root Port                [Enable]
    Max Link Speed                  [Auto]




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


          Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```
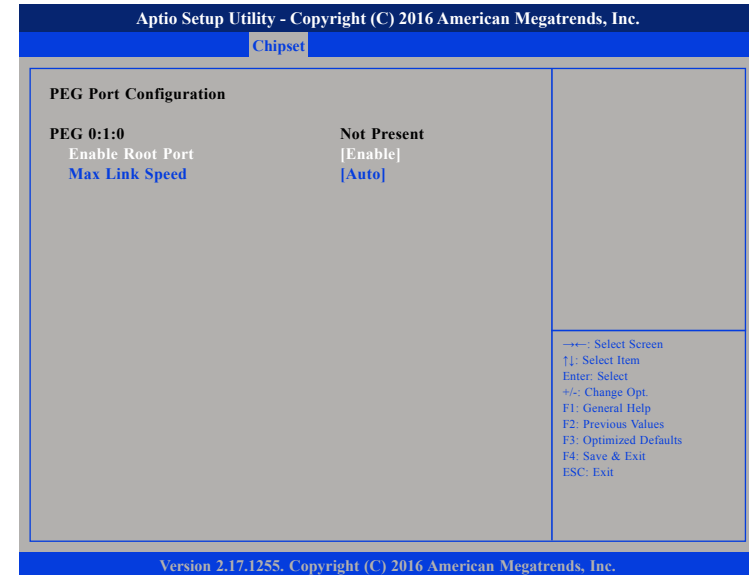
Enable Root Port

Enables or disables the root port.

Max Link Speed

Select the maximum link speed of the PEG device.

Memory Configuration

Detects and displays information on the memory installed in the system.

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
    Chipset

Memory Configuration

Memory RC Version              1.8.0.1
Memory Frequency               2133 Mhz
Total Memory                   8192 MB
VDD                            1200
DIMM#0                         Not Present
DIMM#2                         8192 MB
Memory Timings (tCL-tRCD-tRP-tRAS)  15-36

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

    Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

PCH-IO Configuration

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
                        Chipset

Intel PCH RC Version       1.8.0.0              BIOS Security Configuration
Intel PCH SKU Name         PCH-H Desktop Q170 SKU  settings.
Intel PCH Rev ID           31/D1

► BIOS Security Configuration
► HD Audio Configuration

PCH LAN Controller         [Enabled]
Restore on AC power loss   [Last State]

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

    Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.
```

PCH LAN Controller

Enables or disables onboard NIC.

Restore on AC Power Loss

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

BIOS Security Configuration

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.	
Chipset	
BIOS Security Configuration	Enable or disable bytes 38h-3Fh in the upper and lower 128-byte bank of RTC RAM lockdown.
RTC Lock [Disabled]	
	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.	

RTC Lock

Enables or disables bytes 38h-3Fh in the upper and lower 128-byte bank of RTC RAM lockdown.

HD Audio Configuration

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.	
Chipset	
HD Audio Configuration	Control Detection of the HD audio device. Disabled = Azalia will be unconditionally disabled Enabled = Azalia will be unconditionally Enabled Auto = Azalia will be enabled if present, disabled otherwise.
HD Audio [Auto]	
	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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HD Audio

Control detection of the HD audio device.

Disabled	HD audio will be unconditionally disabled.
Enabled	HD audio will be unconditionally enabled.
Auto	HD audio will be enabled if present, disabled otherwise.

Security

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Main	Advanced	Chipset	Security	Boot	Save & Exit

Password Description

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

Administrator Password
User Password

Set Administrator Password

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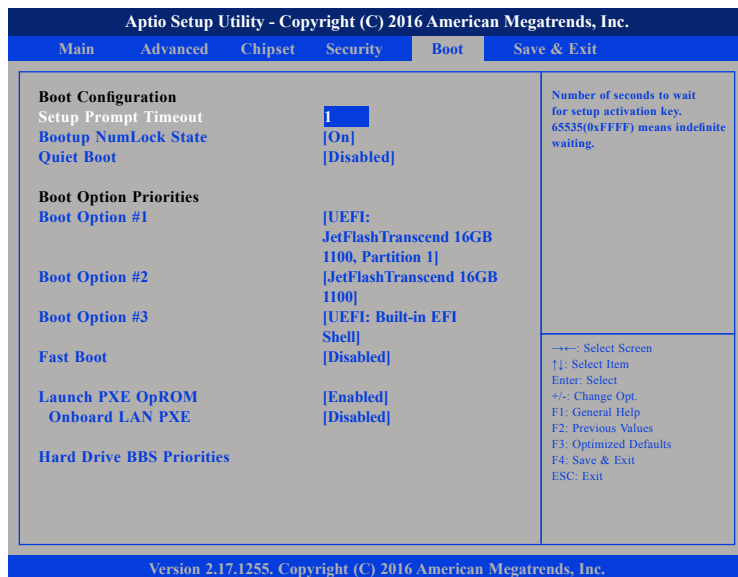
Administrator Password
Select this to reconfigure the administrator's password.

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

Boot

This section is used to configure the boot features.

```
                Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
   Main      Advanced    Chipset    Security      Boot      Save & Exit

   Boot Configuration                                    Number of seconds to wait
   Setup Prompt Timeout            1                     for setup activation key.
   Bootup NumLock State            [On]                  65535(0xFFFF) means indefinite
   Quiet Boot                      [Disabled]            waiting.

   Boot Option Priorities
   Boot Option #1                  [UEFI:
                                   JetFlashTranscend 16GB
                                   1100, Partition 1]

   Boot Option #2                  [JetFlashTranscend 16GB
                                   1100]

   Boot Option #3                  [UEFI: Built-in EFI
                                   Shell]                 →←: Select Screen
                                                          ↑↓: Select Item
   Fast Boot                       [Disabled]             Enter: Select
                                                          +/-: Change Opt.
   Launch PXE OpROM                [Enabled]              F1: General Help
    Onboard LAN PXE                [Disabled]             F2: Previous Values
                                                          F3: Optimized Defaults
   Hard Drive BBS Priorities                              F4: Save & Exit
                                                          ESC: Exit


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```

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 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.

Fast Boot

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Launch PXE OpROM Policy

Controls the execution of UEFI and legacy PXE OpROM.

Onboard LAN PXE

Enables or disables onboard LAN PXE ROM.

Hard Drive BBS Priorities

Use the Hard Disk Drive BBS priorities options to set the order of the devices in this group.

Save & Exit

```
              Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
   Main        Advanced     Chipset     Security      Boot     Save & Exit

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

   Restore Defaults

   Boot Override
   UEFI: Built-in EFI Shell
   UEFI: JetFlashTranscend 16GB 1100, Partition 1
   JetFlashTranscend 16GB 1100
   Launch EFI Shell from filesystem device

                                                       →←: 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 and reboot the system 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.