NEXCOM International Co., Ltd.

IoT Automation Solutions Business Group

PICMG Single Board Computer (PICMG 1.3)

PEAK 886VL2

User Manual

NEXCOM International Co., Ltd.
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PREFACE

Copyright

Disclaimer

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Acknowledgements

PEAK 886VL2 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 2002/95/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 2006 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.

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

Conventions Used in this Manual

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

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the PEAK 886VL2 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	20P0886VL00X0	ASSY PEAK 886VL2	PICMG 1.3 computing board	1
2	60177A0289X00	PEAK 886VL2 Quick Reference Guide VER:A	KRAMER	1
3	60233ATA73X00	SATA cable ACMELUX: 19922413	Standard L:300mm	1
4	60233PRT15X00	Cable CONNTEK: A02-C016-V01	Print 25 TO 2.0mm 26-pin PIT:1.0mm L:260mm w/bracket	1
5	60233PS215X00	PS2 Y cable VERA TECH: GSE090505B	W/bracket PS2 to JST 6-pin 2.0mm L:250mm+-10mm	1
6	60233SIO03X00	Cable EDI: 13420901511-RS	COM port 9-pin to housing 10-pin PIT: 2.0mmx2 L:150mm+-10mm	1
7	60233USB60X00	USB cable CONNTEK: A02-B001-V01	USB CONx2+bracket to JST 6-pin 2.5mm L:240+-15mm	1
8	6029900037X00	DOW CORNING 340 Silcone Heat Sink Compound(3g)		1
9	602DCD0555X00	PEAK 886VL2 DVD driver VER2.0	JCL	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	60233US119X00	(N) USB3.0 CABLE ST:13-450-E007	USB A/Fx2 TO 2x10P L=380mm
4	5050300481X00	LGA1156 CPU cooler USE:FHSA9025S-1288	88x88x36.7mm AL6063 7010FAN 4300RPM L:200mm

Ordering Information

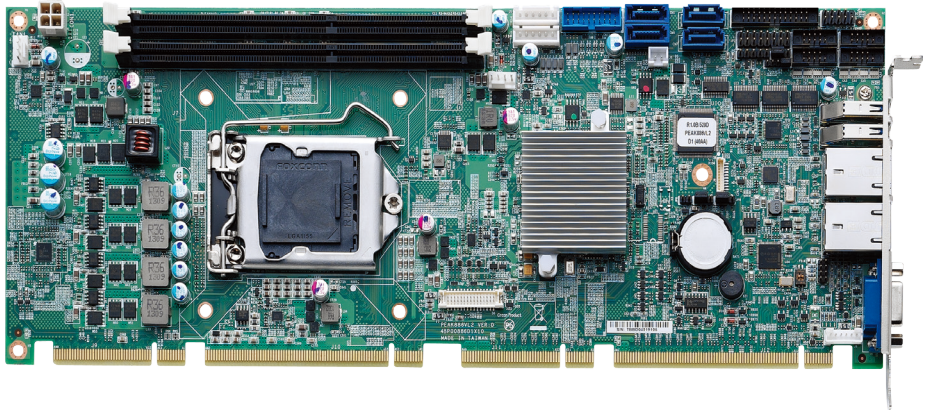
The following information below provides ordering information for PEAK 886VL2.

PEAK 886VL2 (P/N: 10P0886VL00X0) RoHS Compliant

PICMG1.3 Single computing board, 3rd generation Intel® Core™ processor family with VGA/HDMI/DVI-D/ 2x Gigabit LAN/ 10x USB / 4x SATA / PCIe x16 / TPM (optional)

Chapter 1: Product Introduction

Overview



Key Features

- Scalable platform 3rd generation Intel® Core™ i7/ i5/ i3 processor, non-ECC
- Intel® Q77 PCH chipset support PICMG 1.3 specification
- Support dual channel DDR3 with non-ECC DIMMs 1333/1600MHz up to 16GB
- Support PCIe x16, 4 PCIe x1, 4 USB 3.0/ 4 USB 2.0, 2 SATA 3.0/ 2 SATA 2.0 and GbE
- Display support for VGA, DVI, HDMI, DisplayPort
- Dimension 338.58 x 126.39 mm^2 (W x L) (8 layers single side)

Hardware Specifications

CPU Support

- Support Intel® LGA1155, 3rd generation Intel® Core™ processor
  Intel® Core™ i7-3770 (4C/ 8M cache/ 3.4GHz/ Max. TDP 77W)
  Intel® Core™ i5-3550S (4C/ 6M cache/ 3.0GHz/ Max. TDP 65W)
  Intel® Core™ i3-3220 (2C/ 3M cache/ 2.4GHz/ Max. TDP 55W)
  Intel® Pentium® G2120 (2C/ 3M cache/ 1.6GHz/ Max. TDP 65W)

Main Memory

- Dual DDR3/ DIMMs, support 1333/1600MHz Non-ECC system memory up to 16GB

Platform Control Hub

- Intel® Q77 PCH chipset

BIOS

- AMI System BIOS
- Plug and play support
- Advanced Power Management and Advanced Configuration & Power Interface support

Display

- Intel® HD graphics with DX11 support up to two independent displays
- One PCI Express x16 Lane down to PICMG1.3 golden finger
- Supports VGA and DVI/ HDMI/ DisplayPort interface

Audio

- HDA interface with pin header (reserved function)

On-board LAN

- Intel® 82579LM Gigabit Ethernet, support iAMT 8.0
- Intel® 82574l Gigabit Ethernet
- Support PXE boot from LAN, wake on LAN function

I/O Interface

- USB 3.0: 2 ports through I/O bracket/ USB 2.0: 4 ports through backplane/ 2 ports through 2.5mm JST connectors
- Six SATA ports: Four SATA 3.0 / Two SATA 2.0 (Support RAID0/ 1/ 5/ 10 and Intel® Rapid Storage Technology AHCI)
- One PCI Express x16 / Four PCI Express x1
- Two RJ45 Gigabit Ethernet LAN ports
- Four serial ports (COM2 Supports RS232/422/485, RI pin can supply 5V/12V voltage)
- Parallel port through box header
- Keyboard / Mouse interface
- HDA Interface through pin header for audio function
- Onboard pin header for IRDA
- TPM support (optional)

Power Requirements

- +12V, +5V, +3.3V, +5VSB, +3.3V RTC power
- Power source form backplane through golden finger and AUX +12V
- Support ATX / AT power supplies

Dimensions

- 338mm (W) x 126mm (L)

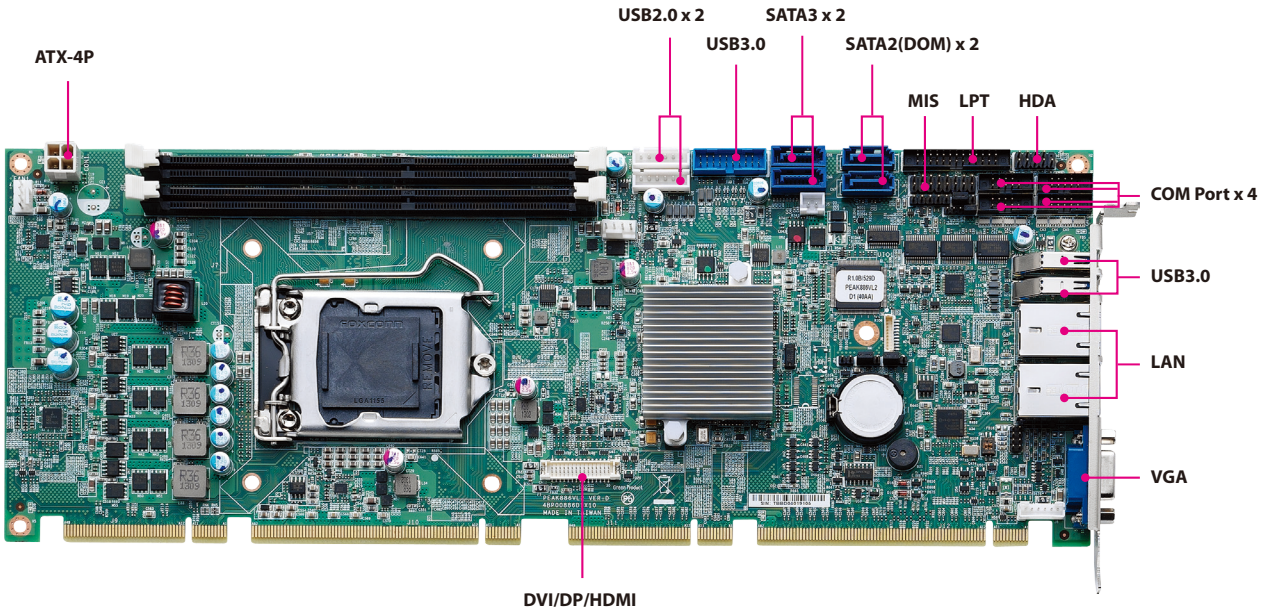
Environment

- Board Level Operating temperatures: 0°C to 60°C
- Storage temperatures: -20°C to 80°C
- Relative humidity:
  10% to 90% (operating, non-condensing)
  5% to 95% (non-operating, non-condensing)

Certifications

- Meet CE
- FCC Class A

Knowing Your PEAK 886VL2



Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the PEAK 886VL2 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:

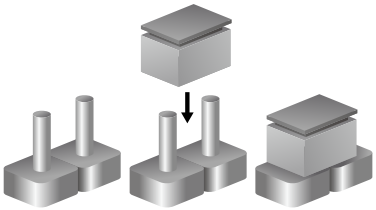
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

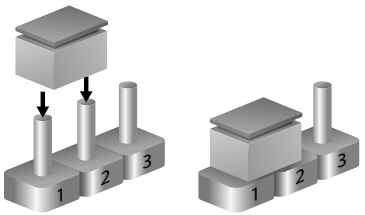
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

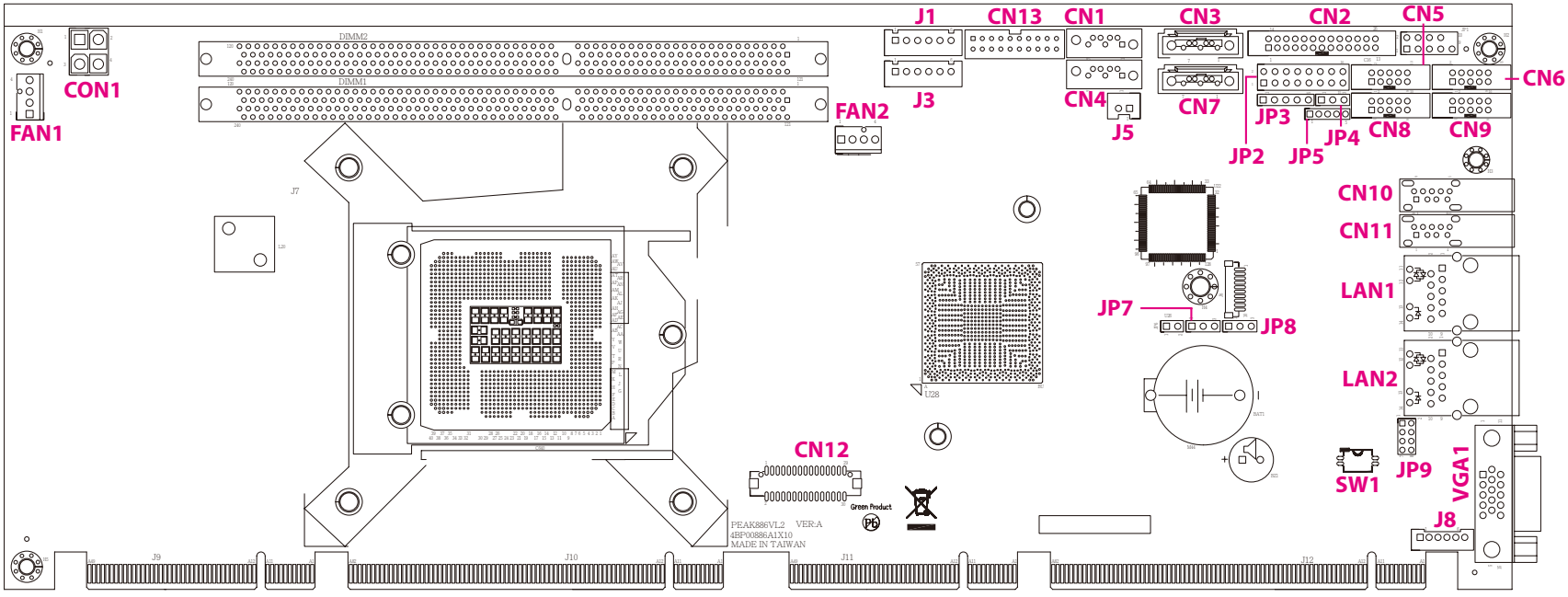


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors for PEAK 886VL2.



Jumpers

CMOS Connector

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP7

Pin	Settings
1-2 On	Normal
2-3 On	Clear CMOS

1-2 On: default

Pin	Definition
1	NC
2	RTCRST#
3	GND

AT/ATX Pin Header

Connector type: 1x3 3-pin header, 2.00mm pitch
Connector location: JP4

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

1-2 On: default

Pin	Definition
1	AT_PWRBT#
2	PCH PWRBT#
3	EXTAL PWRBT#

ME Connector

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP8

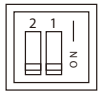
Pin	Settings
1-2 On	Normal
2-3 On	Clear CMOS

1-2 On: default

Pin	Definition
1	NC
2	SRTCRST#
3	GND

DIP Switch

Connector type: 2x2 4-pin DIP switch
Connector location: SW1



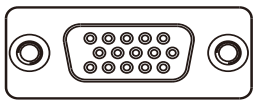
Pin	Settings
SW1.1	OFF: Control by SW1.2
SW1.2	ON: PCIe x1 OFF: PCIe x4

Connector Pin Definitions

External Connectors

VGA Port

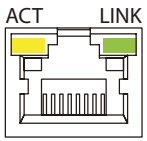
Connector type: DB-15 port, 15-pin D-Sub
Connector location: VGA1



Pin	Definition	Pin	Definition
1	CRT_RED	2	CRT_GREEN
3	CRT_BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	5V	10	GND
11	NC	12	CRT_SDA
13	CRT_HSYNC	14	CRT_VSYNC
15	CRTDDCCLK		

LAN1 Port

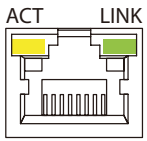
Connector type: RJ45 port with LEDs
Connector location: LAN1



Pin	Definition	Pin	Definition
1	LAN1_M0P	2	LAN1_M0N
3	LAN1_M1P	4	LAN1_M2P
5	LAN1_M2N	6	LAN1_M1N
7	LAN1_M3P	8	LAN1_M3N
9	LAN1LINK#	10	LAN LED1+
11	LAN1_LED_LNK#_ACT	12	LAN LED2+

LAN2 Port

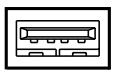
Connector type: RJ45 port with LEDs
Connector location: LAN2



Pin	Definition	Pin	Definition
1	LAN2_M0P	2	LAN2_M0N
3	LAN2_M1P	4	LAN2_M2P
5	LAN2_M2N	6	LAN2_M1N
7	LAN2_M3P	8	LAN2_M3N
9	LAN2LINK#	10	LAN LED1+
11	LAN2_LED1	12	LAN LED2+

USB3.0 Ports

Connector type: USB 3.0/2.0 port, Type A
Connector location: CN10 and CN11

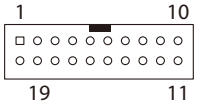


Pin	Definition	Pin	Definition
1	VCC(+5V)	2	USBN
3	USBP	4	GND
5	USB3.0_RXN	6	USB3.0_RXP
7	GND	8	USB3.0_TXN
9	USB3.0_TXP		

Internal Connectors

USB 3.0 Box Header

Connector type: 2x10 20-pin header
Connector location: CN13



Pin	Definition	Pin	Definition
1	P5V_OC01_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_1N_R
9	USB_1P_R	10	USB3_ID
11	USB_0P_R	12	USB_0N_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_OC01_C		

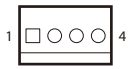
USB 2.0 Ports

Connector type: 1x6 6-pin header, 2.5mm pitch
Connector location: J1 and J3

Pin	Definition	Pin	Definition
1	VCC(+5V)	2	USBN
3	USBP	4	USBN
5	USBP	6	GND

Smart FAN Connectors

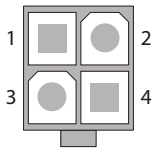
Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: FAN1 and FAN2



Pin	Definition	Pin	Definition
1	GND	2	+12V
3	S1_FANIO1	4	S1_FANPWN1

+12V Power Connector

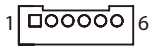
Connector type: 2x2 4-pin header, 4.2mm pitch
Connector location: CON1



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

Keyboard and Mouse Connector

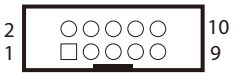
Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J8



Pin	Definition	Pin	Definition
1	VCC(+5V)	2	KDAT
3	KCLK	4	MDAT
5	MCLK	6	GND

Serial Port Box Headers

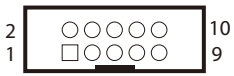
Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: COM1 (CN8), COM4 (CN6), COM3 (CN9)



Pin	Definition	Pin	Definition
1	DCD#	2	RX
3	TX	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	NC

RS232/ RS422/ RS485 Serial Port Box Header

Connector type: 2x5 10-pin header, 2.00mm pitch
Connector location: COM2(CN5)



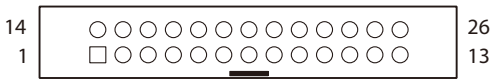
RS232			
Pin	**Definition**	**Pin**	**Definition**
1	DCD#	2	RX
3	TX	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	NC

RS485			
Pin	**Definition**	**Pin**	**Definition**
1	TX# / RX#	2	TX / RX
3	NC	4	NC
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC

RS422			
Pin	**Definition**	**Pin**	**Definition**
1	TX#	2	TX
3	RX	4	RX#
5	GND	6	RTS#
7	RTS	8	CTS
9	CTS#	10	NC

Parallel Port Box Header

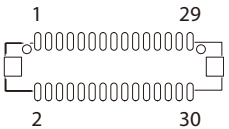
Connector type: 2x13 26-pin header, 2.54mm pitch
Connector location: CN2



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

DVI/ HDMI Port Connector

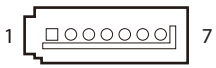
Connector type: 2x15 30-pin header, 1.25mm pitch
Connector location: CN12



Pin	Definition	Pin	Definition
1	DPB0 P	2	HDMI POWER(+5V)
3	DPB0 N	4	HDMI POWER(+5V)
5	GND	6	DPB POWER(+3.3V)
7	DPB1 P	8	DPB POWER(+3.3V)
9	DPB1 N	10	HDMI_DIS
11	GND	12	HDMI_CTRL_CLK
13	DPB2 P	14	GND
15	DPB2 N	16	HDMI_CTRL_DATA
17	GND	18	GND
19	DPB3 P	20	GND
21	DPB3 N	22	GND
23	GND	24	HDMI_HPD
25	DPB AUX P	26	GND
27	DPB AUX N	28	DPB_HPD
29	GND	30	GND

SATA 2 Connectors

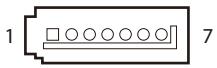
Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: CN3 and CN7



Pin	Definition	Pin	Definition
1	GND	2	TXP0
3	TXN0	4	GND
5	RXN0	6	RXP0
7	GND	8	

SATA 3 Connectors

Connector type: Standard Serial ATAII 7P (1.27mm, SATA-M-180)
Connector location: CN1 and CN4



Pin	Definition	Pin	Definition
1	GND	2	TXP1
3	TXN1	4	GND
5	RXN1	6	RXP1
7	GND	8	

IrDA Pin Header

Connector type: 1x5 5-pin header, 2.54mm pitch
Connector location: JP3

Pin	Definition	Pin	Definition
1	VCC5	2	CIR RX
3	IR RX	4	GND
5	IR TX		

RI Pin Header

Connector type: 1x5 5-pin header, 2.00mm pitch
Connector location: JP5

Pin	Definition	Pin	Definition
1	VCC5	2	CON_9
3	+12V	4	CON_9
5	COM_RI		

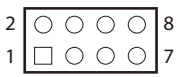
SATA DOM Power Connector

Connector type: 1x2 2-pin header, 2.5mm pitch
Connector location: J5

Pin	Definition
1	VCC5
2	GND

LAN LED Pin Header

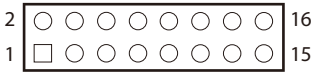
Connector type: 2x4 8-pin header, 2.00mm pitch
Connector location: JP9



Pin	Definition	Pin	Definition
1	LAN1 ACT LED-	2	LAN2 ACT LED-
3	LAN1 ACT LED+	4	LAN2 ACT LED+
5	LAN1 LINK 1G	6	LAN2 LINK 1G
7	LAN1 LINK 100	8	LAN2 LINK 100

2x8 Pin Header

Connector type: 2x8 16-pin header, 2.54mm pitch
Connector location: JP2



Pin	Definition	Pin	Definition
1	SATA_LED+	2	POWER_LED+
3	SATA_LED-	4	POWER_LED-
5	RESET BUTTON-	6	POWER BUTTON+
7	RESET BUTTON+	8	POWER BUTTON-
9	SPKR OUT	10	SMB_CLK
11	N/A	12	SMB_DATA
13	N/A	14	SYSTEM TEMP
15	SPKR IN	16	TEMP GND

Chapter 3: BIOS Setup

This chapter describes how to use the BIOS setup program for the PEAK 886VL2. 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 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. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT PRESS Ctrl + Alt + Esc

Press the Del key to enter Setup:

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 

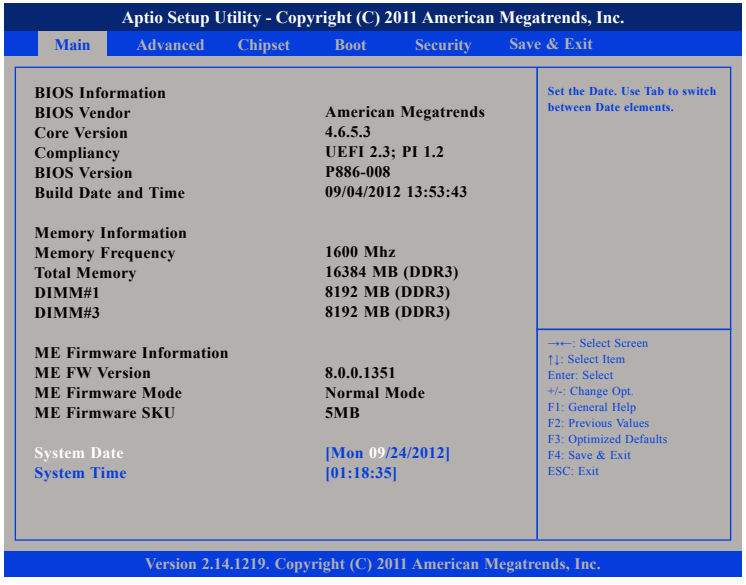
.

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.

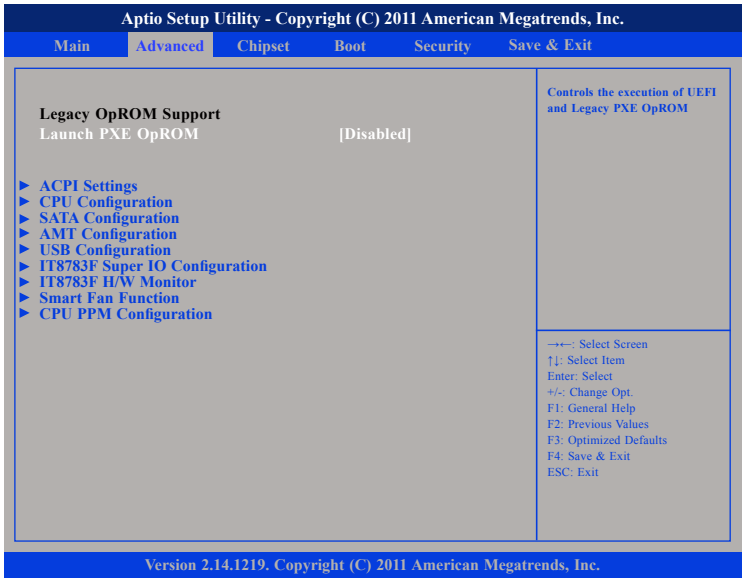
System Time

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.

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.

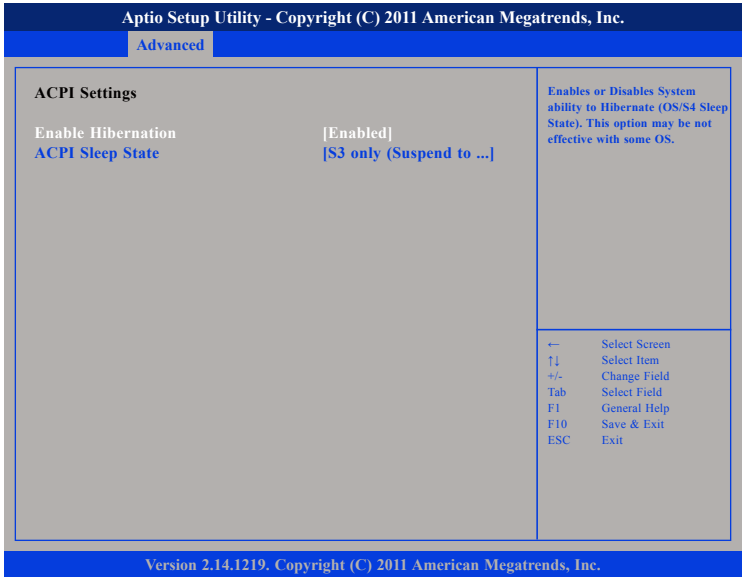


Launch PXE OpROM

Enables or disables the boot option for legacy network devices connected to the LAN port.

ACPI Settings

This section is used to configure ACPI Settings.



Enable Hibernation

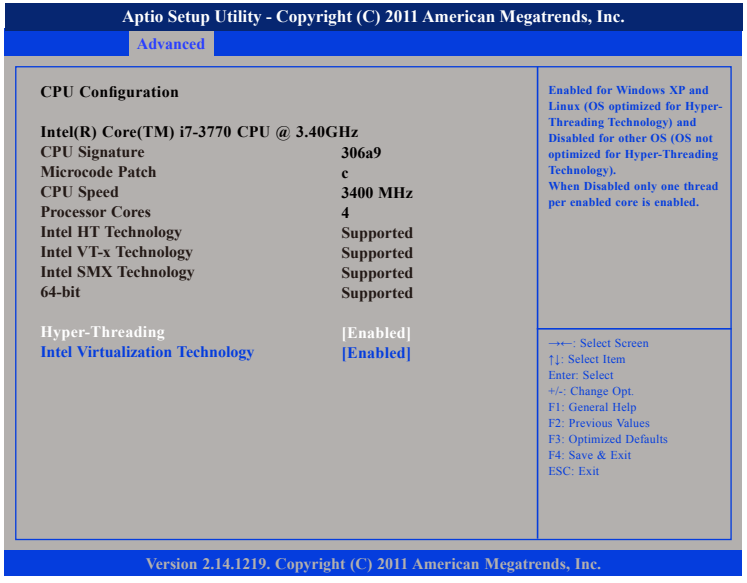
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are S1 (CPU Stop Clock) and S3 (Suspend to RAM).

CPU Configuration

This section is used to configure the CPU.



Hyper-Threading

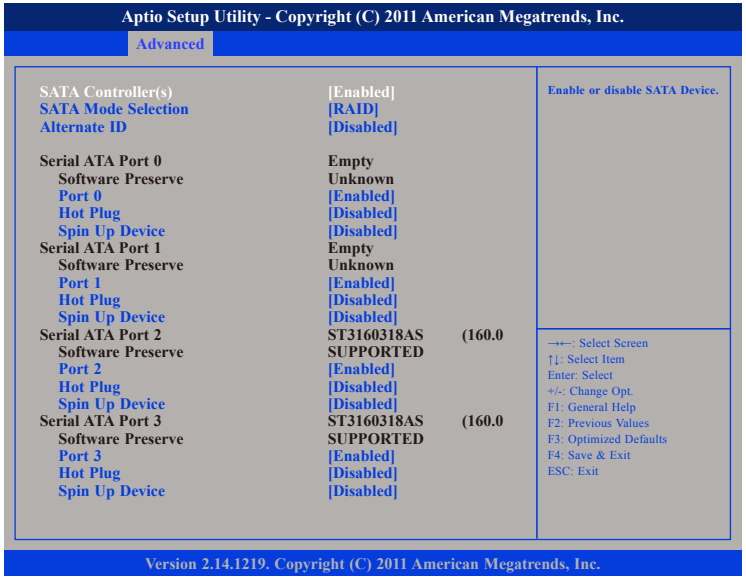
This field is used to enable or disable hyper-threading.

Intel® Virtualization Technology

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

SATA Configuration

This section is used to configure the SATA drives.



SATA Controller(s)

Enables or disables the SATA controller.

SATA Mode Selection

Configures the SATA as IDE, AHCI or RAID mode.

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

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 3

Enables or disables Serial ATA port 0 to port 3.

Hot Plug

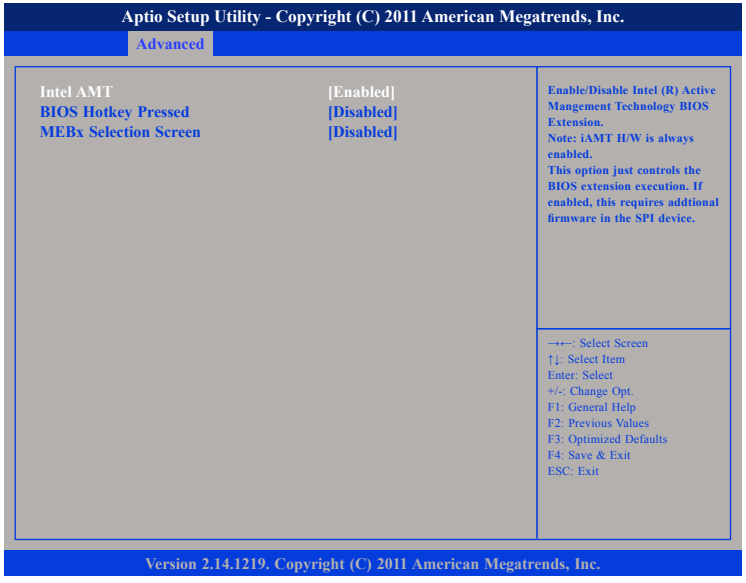
Enables or disables hot plugging feature on Serial ATA port 0 to port 3.

Spin Up Device

Enables or disables staggered spin up on devices connected to Serial ATA port 0 to port 3.

AMT Configuration

This section is used to configure Active Management Technology (AMT) options.



Intel® AMT

Enables or disables Intel® Active Management Technology.

BIOS Hotkey Pressed

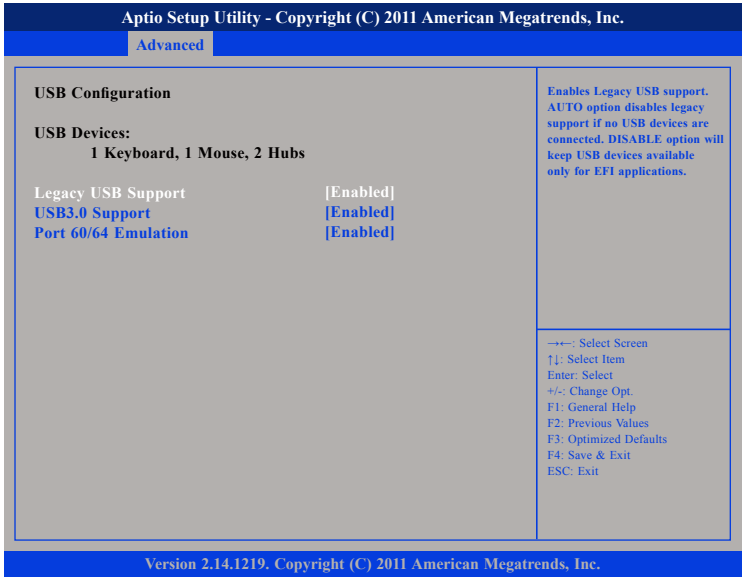
Enables or disables BIOS hotkey press.

MEBx Selection Screen

Enables or disables MEBx selection screen.

USB Configuration

This section is used to configure the USB.



Legacy USB Support

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

USB3.0 Support

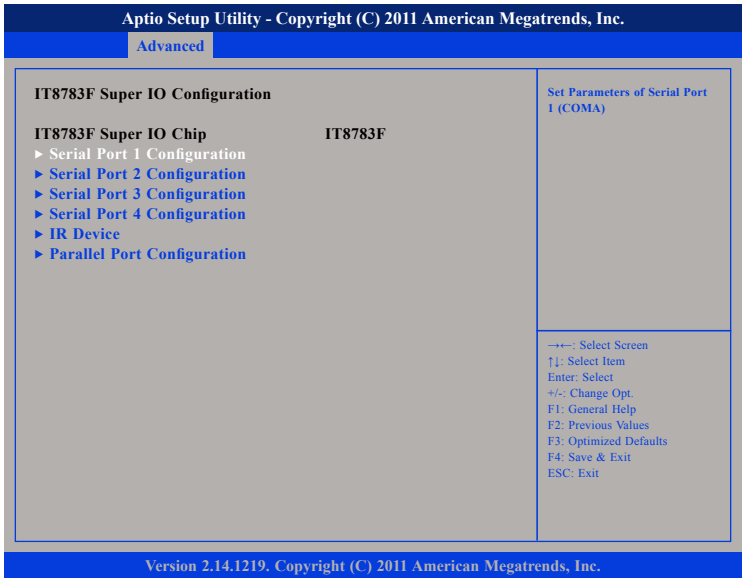
Enables or disables USB 3.0 controller support.

Port 60/64 Emulation

Enables the 60h/64h I/O port emulation. You must enable this to fully support USB keyboard legacy for non-USB OSes.

IT8783F Super IO Configuration

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

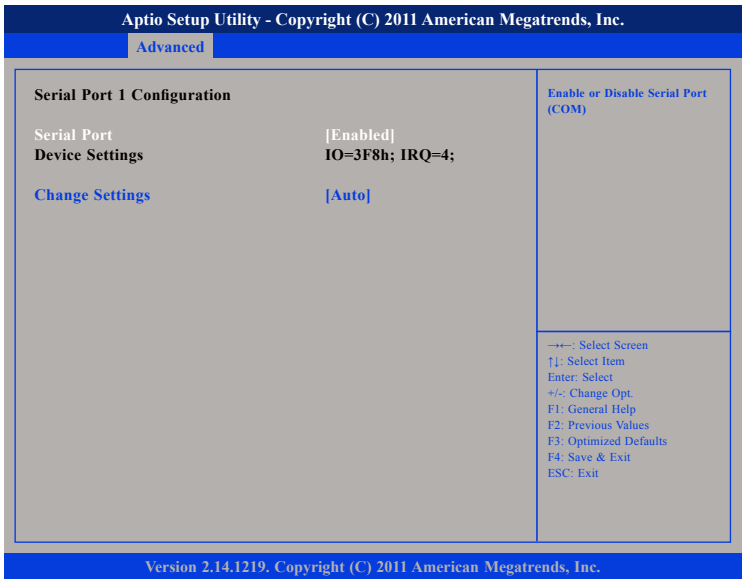


ITB8783 Super IO Chip

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

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

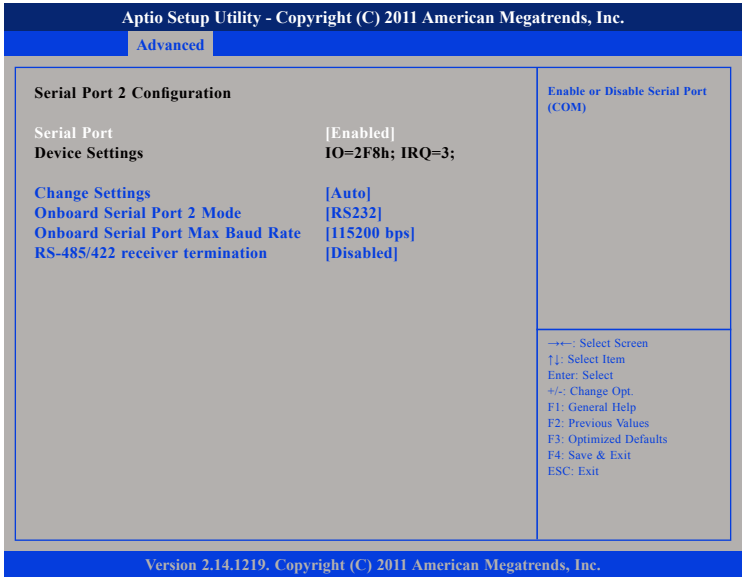
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Onboard Serial Port 2 Mode

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

Onboard Serial Port Max Baud Rate

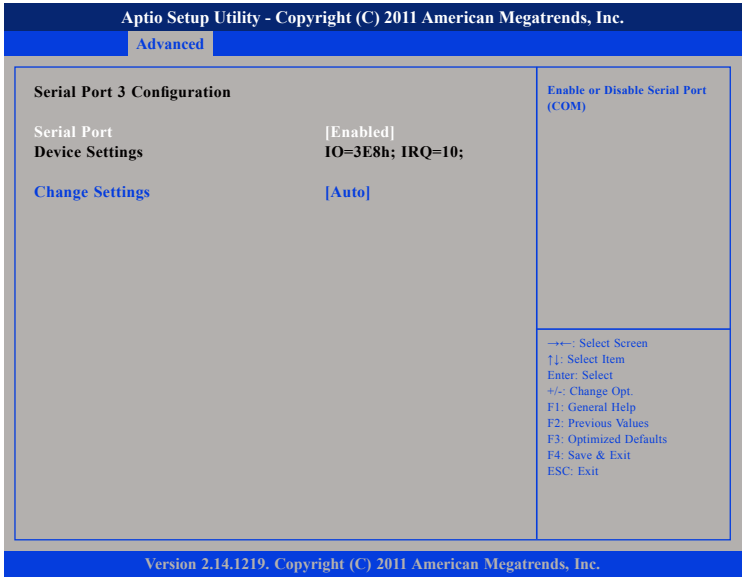
Select this to change the max baud rate of the serial port.

RS-485/422 Receiver Termination

Enables or disables RS-485/422 receiver termination.

Serial Port 3 Configuration

This section is used to configure serial port 3.



Serial Port

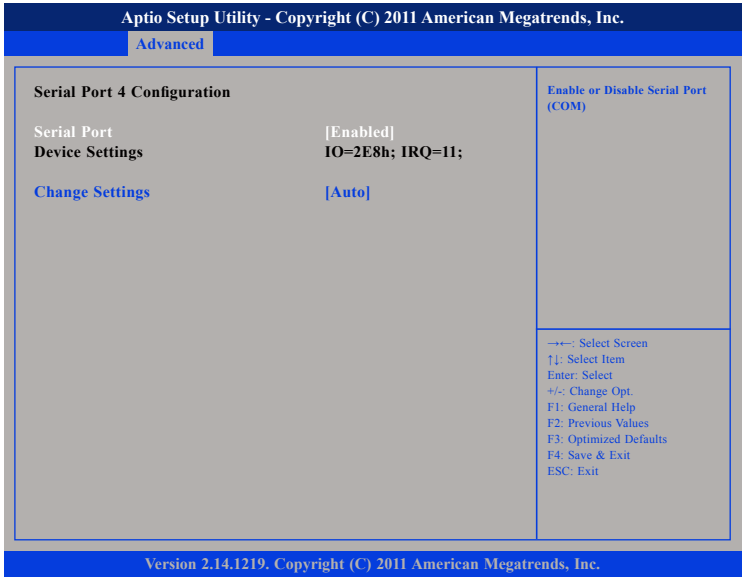
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 4 Configuration

This section is used to configure serial port 4.



Serial Port

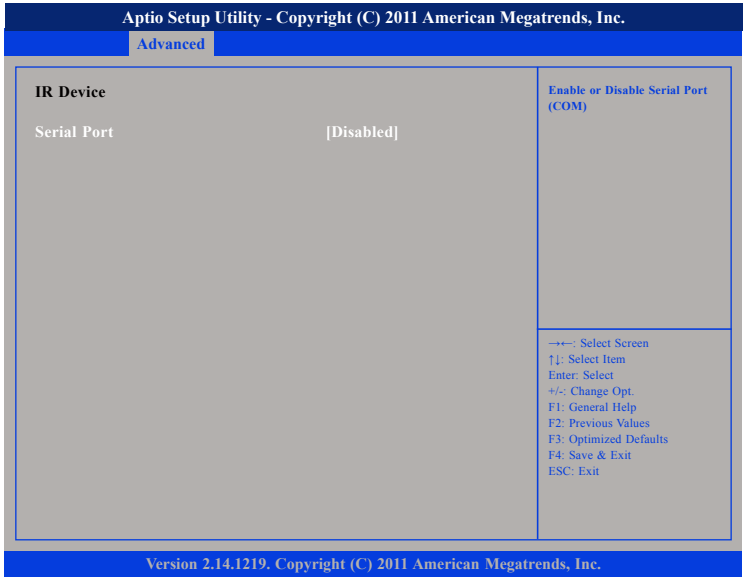
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

IR Device

This section is used to configure the IR device.

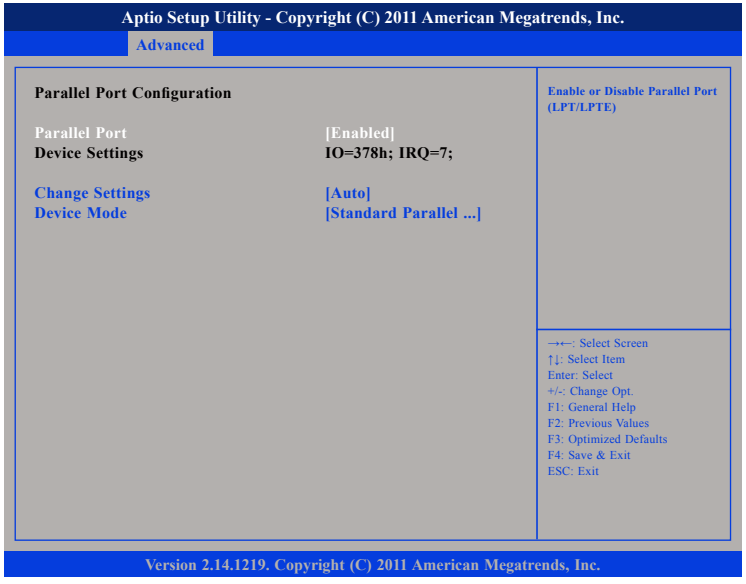


Serial Port

Enables or disables the serial port.

Parallel Port Configuration

This section is used to configure the parallel port.



Parallel Port

Enables or disables the parallel port.

Change Settings

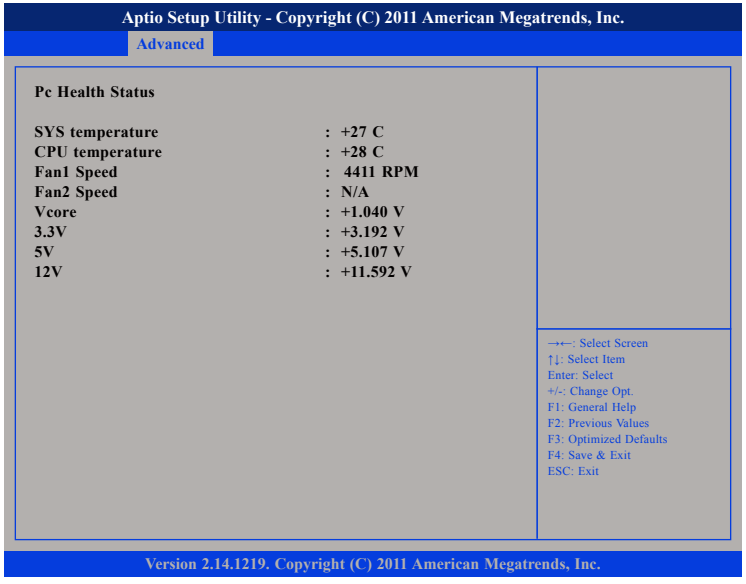
Selects an optimal setting for the Super IO device.

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.

IT8783F H/W Monitor

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



SYS Temperature
Detects and displays the current system temperature.

CPU Temperature
Detects and displays the current CPU temperature.

Fan1 Speed
Detects and displays system fan1 speed.

Fan2 Speed
Detects and displays system fan2 speed.

Vcore
Detects and displays the Vcore CPU voltage.

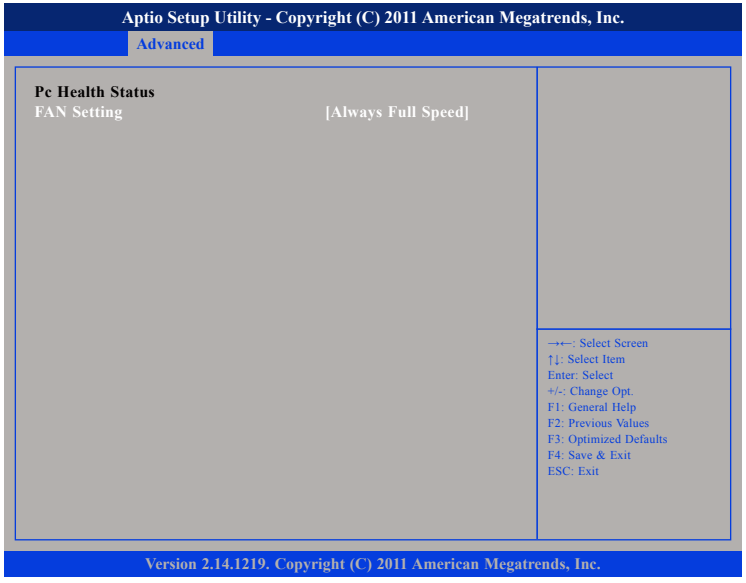
3.3V
Detects and displays 3.3V voltage.

5V
Detects and displays 5V voltage.

12V
Detects and displays 12V voltage.

Smart Fan Function

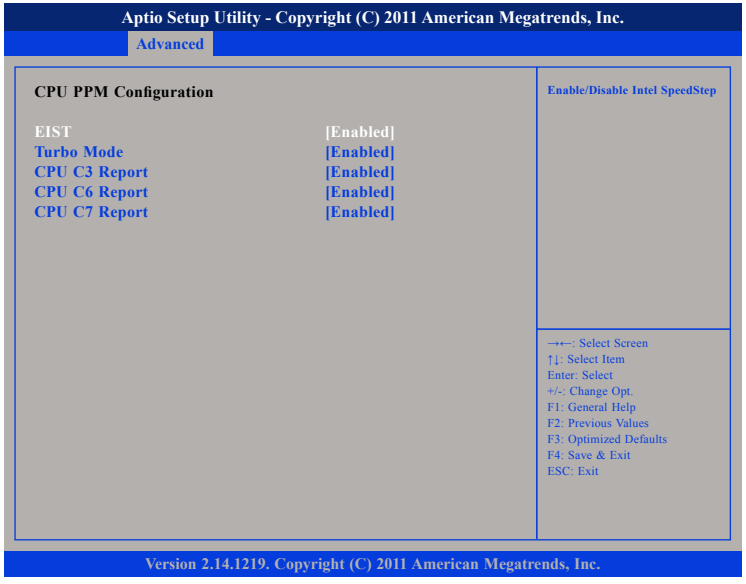
This section is used to configure the fan's function.



FAN Setting
Configures the speed of the fan.

CPU PPM Configuration

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



EIST
Enables or disables Intel® SpeedStep.

Turbo Mode
Enables or disables turbo mode.

CPU C3 Report
Enables or disables C3 report to the operating system.

CPU C6 Report
Enables or disables C6 report to the operating system.

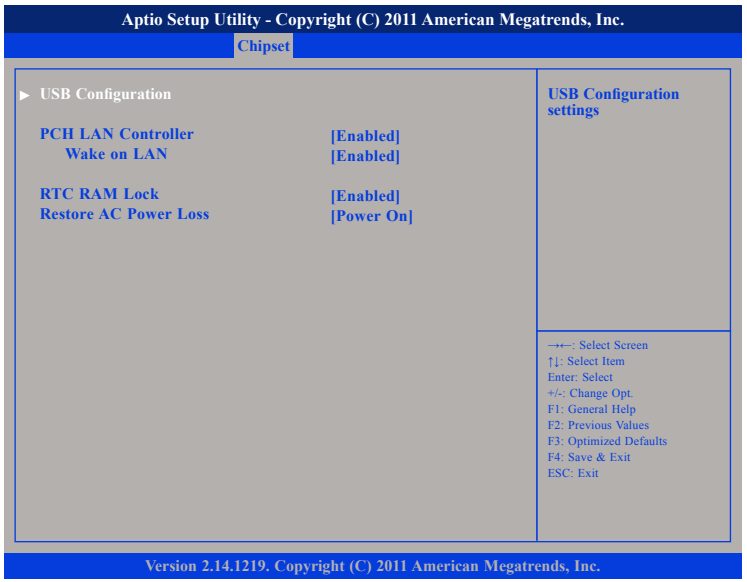
CPU C7 Report
Enables or disables C7 report to the operating system.

Chipset

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

Setting incorrect field values may cause the system to malfunction.

PCH-IO Configuration



PCH LAN Controller

Enables or disables onboard NIC.

Wake on LAN

Enables or disables integrated LAN to wake the system.

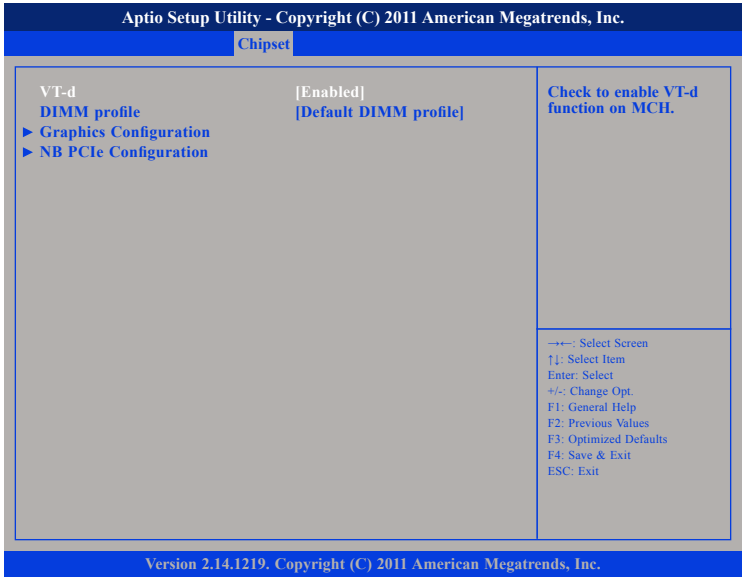
RTC RAM Lock

Enables or disables RTC RAM lock.

Restore AC Power Loss

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

System Agent (SA) Configuration



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

DIMM Profile
Select DIMM timing profile that should be used. The options are Default DIMM profile, Custom Profile, XMP Profile 1 and XMP Profile 2.

Graphics Configuration
Configures the graphic chip settings.

NB PCIe Configuration
Configures the NB PCI Express settings.

Boot

This section is used to configure the boot features.

Quiet Boot

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

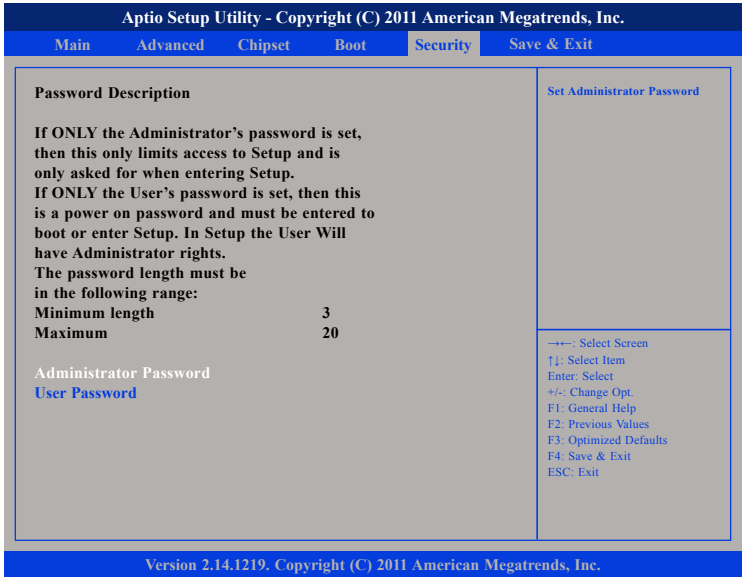
Boot Option Priorities

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.

Hard Drive BBS Priorities

Sets the order of the legacy devices in this group.

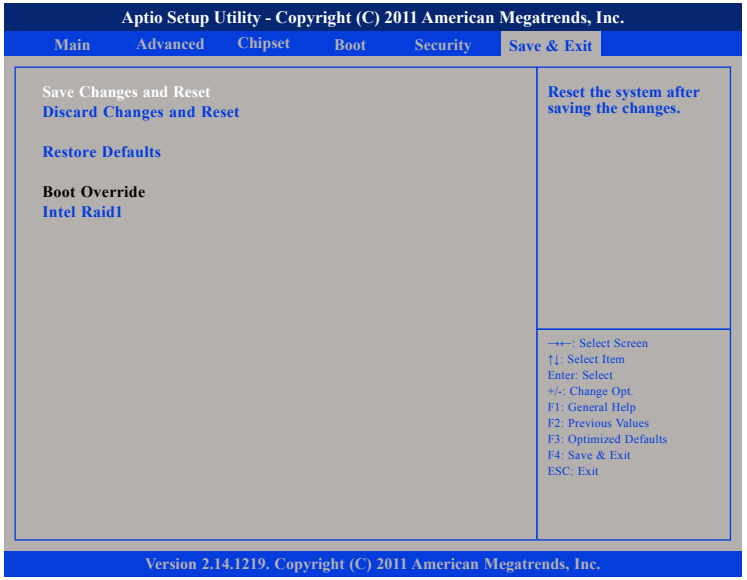
Security



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

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

Save & Exit



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.

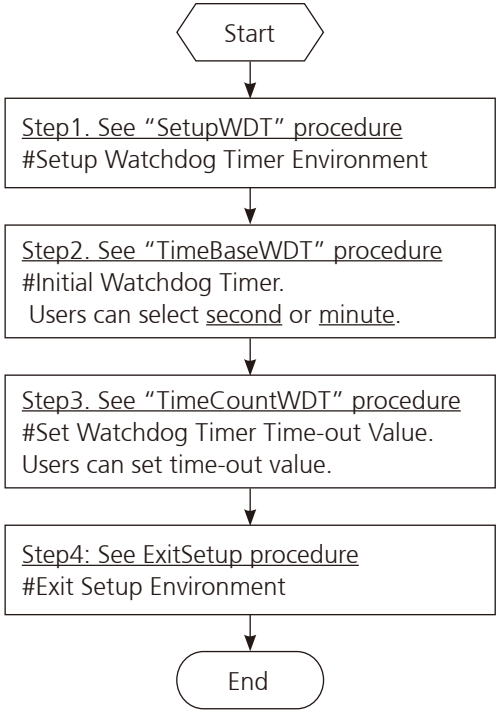
Restore Defaults
To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Boot Override
To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

Appendix A: Watchdog Timer

WDT Programming Guide

PEAK 886VL2 Watch Dog Function Configuration Sequence Description:



```
#define SUPERIO_PORT 0x2E
#define WDT_SET 0x72
#define WDT_VALUE 0x73

void main(void)
{
  #Enter SuperIO Configuration
        outportb(SUPERIO_PORT, 0x87);
        outportb(SUPERIO_PORT, 0x01);
        outportb(SUPERIO_PORT, 0x55);
        outportb(SUPERIO_PORT, 0x55);

  # Set LDN
        outportb(SUPERIO_PORT, 0x07);
        outportb(SUPERIO_PORT+1 ,0x07);

  # Set WDT setting
        outportb(SUPERIO_PORT, WDT_SET);
        outportb(SUPERIO_PORT+1, 0xC0); # Use the second
                                        # Use the minute, change value to 0x40
  # Set WDT sec/min
        outportb(SUPERIO_PORT, WDT_VALUE);
        outportb(SUPERIO_PORT+1, 0x05); #Set 5 seconds
}
```

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