NEXCOM International Co., Ltd.

Intelligent Platform & Services Business Unit
PICMG Single Board Computer (PICMG 1.3)
PEAK 890VL2
User Manual

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PREFACE

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Acknowledgements

PEAK 890VL2 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.

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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 890VL2 package that you received is complete. Your package should have all the items listed in the following tables.

Item	Part Number	Name	Name	Qty
1	PEAK890VL2 Series Single Board Computing		Q670E, HDMI, MINI DP, USB2, LAN2	1
2	603USB0006X00	USB3.0 CABLE ST:13-450-E014	USB3.0 CONx2+BRACKET TO HOUSING 2x10P PH:2.0mm L:300mm	1
3	603COM0130X00	COM PORT CABLE ST:ST-2009021	DB9(M)x2+BRACKET TO HOUSING 1x10P PIT:1.0mm L=250mm	1
4	60233ATA45X00	SATA CABLE TC&C:T107048070813-I	SATA 7P 180D(Lock) to 7P 180D(Lock) 26AWG L:500mm	1

Optional Accessories

Item	Part Number	Name	Description
1	603USB0084X00	USB CABLE FOR EBC-355A ST:MD-5606151	USB CONx2+BRACKET TO DUPONT 10P PIT=2.0mm L=200mm
2	603VGA0059X00	(N)VGA INTERNAL WIRE CABLE FOR PEAK SERIES CP:NEX-230825-01	HD15F TO HOUSING 1x12 W/BK PIT:1.0mm L=300mm
3	TBD	LGA1700 CPU COOLER INVNI: LGA1700-A201	90*90*67mm AL5052+ FAN 10600RPM

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Ordering Information

The following information below provides ordering information for PEAK 890VL2.

PEAK 890VL2 –R (P/N: 10P00089002X0)

PICMG 1.3 full-size SBC, R680E, Intel® LGA1700, DDR5 DIMM, support triple display, LAN x2, USB 3.2 x6, SATA 3.0 x4, M.2 (support PCIe storage)

PEAK 890VL2 –Q (P/N: 10P00089000X0)

PICMG 1.3 full-size SBC, Q670E, Intel® LGA1700, DDR5 DIMM, support triple display, LAN x2, USB 3.2 x6, SATA 3.0 x4, M.2 (support PCIe storage)

PEAK 890VL2 –H (P/N: 10P00089003X0)

PICMG 1.3 full-size SBC, H610E, Intel® LGA1700, DDR5 DIMM, support triple display, LAN x2, USB 3.2 x4, SATA 3.0 x2

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CHAPTER 1: PRODUCT INTRODUCTION

Overview
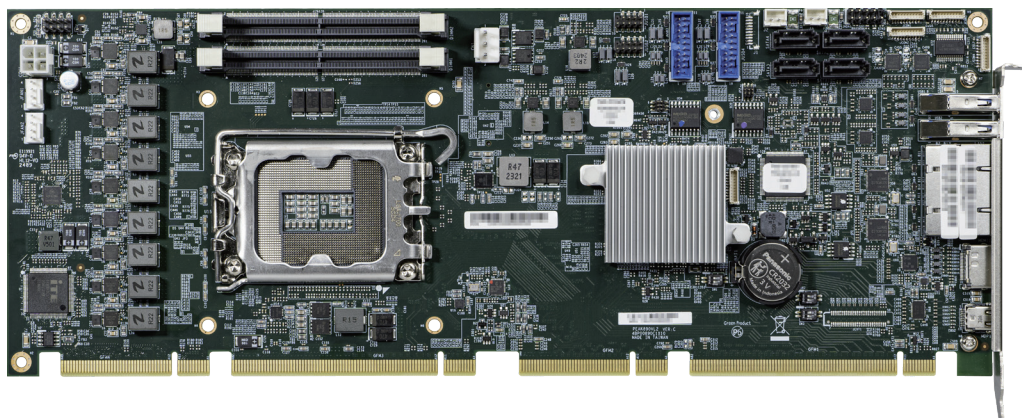
Key Features

- Intel® 12th / 13th Generation Core™ i9/ i7/ i5/ i3) processor

- Support Intel® R680E/ Q670E/ H610E PCH chipset PICMG 1.3 specification

- Support Dual channel DDR5 with ECC/ Non-ECC DIMM 4800MHz

- Support multiple display for Mini-DP, HDMI, VGA

- Support SATA 3.0 W/RAID 0,1,5,10/ PCIe 4.0 M.2 NVMe

- Support Intel® vPro™ technology with Intel® AMT

- Support on board TPM2.0

Hardware Specifications

CPU Support

- Intel® 12th/13th generation Core™ i9/i7/i5/i3/Pentium processor, (65W/ 35W) TDP, LGA1700 Socket

Main Memory

- 2 x SO-DIMM, support Dual channel DDR5 ECC/ Non ECC 4800MHz (Max. 64GB)

Platform Control Hub

- Intel® R680E/ Q670E/ H610E express chipset PCH

BIOS

- AMI UEFI system BIOS
- 256M Bit SPI depended on AMT function
- Dual BIOS for Four PCIe x1 and One PCIe x4

Display

- Integrated Intel® UHD Graphics 770 driven by Xe Architecture
- Support independent triple display
- VGA: resolution up to 1920*1200 pixels @60Hz (via optional cable)
- HDMI: resolution up to 4096*2304 pixels@60Hz
- Mini DP: resolution up to 4096*2304 pixels@60Hz

R680E/ Q670E PCH

- Storage
  - 4 x SATA 7P connector
  - 2 x SATA through to PICMG1.3 connector C to Backplane
  - 1 x M.2 2280 M Key PCIe 4.0x4
  - Support Intel® Rapid Storage Technology
  - Support SATA RAID 0,1,5,10
- USB3.2
  - 2-Ports USB 3.2 Gen2 through I/O bracket
  - 4-Ports USB 3.2 Gen1 through 2.0mm box header
  - Backward compatible for USB 2.0
- USB 2.0
  - 4-Ports USB2.0 through 2.0mm pin header
  - 4-Ports USB2.0 through PICMG1.3 connector C to backplane

H610E PCH:

- Storage
  - 2 x SATA 7P connector
  - 2 x SATA through PICMG1.3 connector C to backplane
- USB 3.2
  - 2-Ports USB 3.2 Gen2 through I/O bracket
  - 2-Ports USB 3.2 Gen1 through 2.0mm box header
  - Backward compatible for USB 2.0
- USB2.0
  - 2-Ports USB2.0 through 2.0 pin header
  - 4-Ports USB2.0 through PICMG1.3 connector C to backplane

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On-board LAN

- 2x Intel® WGI226LM 2.5GbE Controller support Intel® AMT with Intel vPro® (LAN1 Only)
- RJ45 with LED connector x2
- Support boot from LAN (PXE)
- Support wake on LAN

Internal I/O

- Internal I/O
- 2 x RS232/485/422 with auto flow control, 2 x RS232
- 1 x CPU Smart Fan, 1 x System Smart Fan
- WDT 1 ~ 255 steps by software program
- 1 x Front panel connector
- 1 x ATX 4-pin power connector

Edge I/O Interface

- 2 x USB 3.2 ports
- 2 x 2.5Gb LAN ports
- 1 x HDMI 1.4 connector
- 1 x Mini DP connector

Audio

- High definition audio interface (compatible with NEXCOM audio daughter board PN: 10E000HDA00X0 EBK-HAD)

Expansion Interface

- One PCIe Gen3.0 x16/ two PCIe Gen3.0 x8 and one PCIe Gen3.0 x4 to backplane (R680E/ Q670E)
- One PCIe Gen3.0 x16 and one PCIe Gen3.0 x4 to backplane (H610E)
- Four PCI through PICMG 1.3 connector D to backplane

Knowing Your PEAK 890VL2

USB 2.0 x4

SATA Power

RS232/242/485

5V Power

USB 3.2 x4

Audio (HDA)

RS232

Front Panel

ATX Power

CPU/SYS Fan

SATA x4

USB 3.2 x2

2.5GbE x2

HDMI

Mini DP

SW1   SW2   SW3   JP3

M.2 2280 Key B

VGA
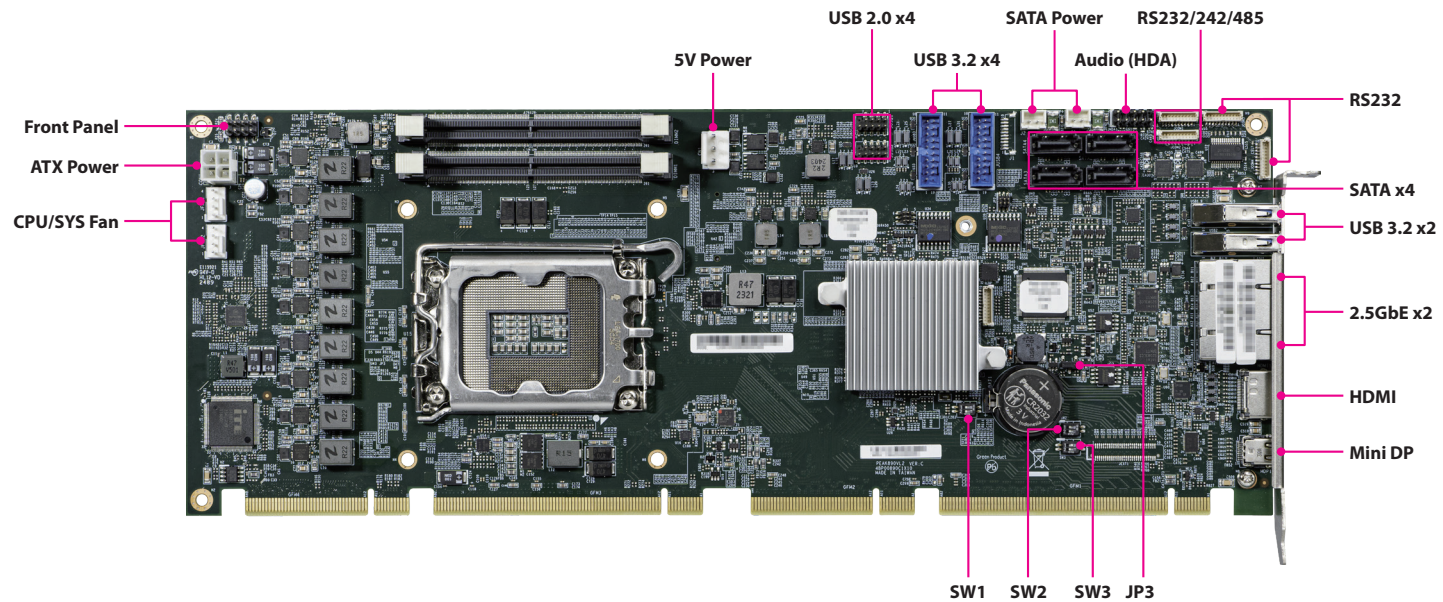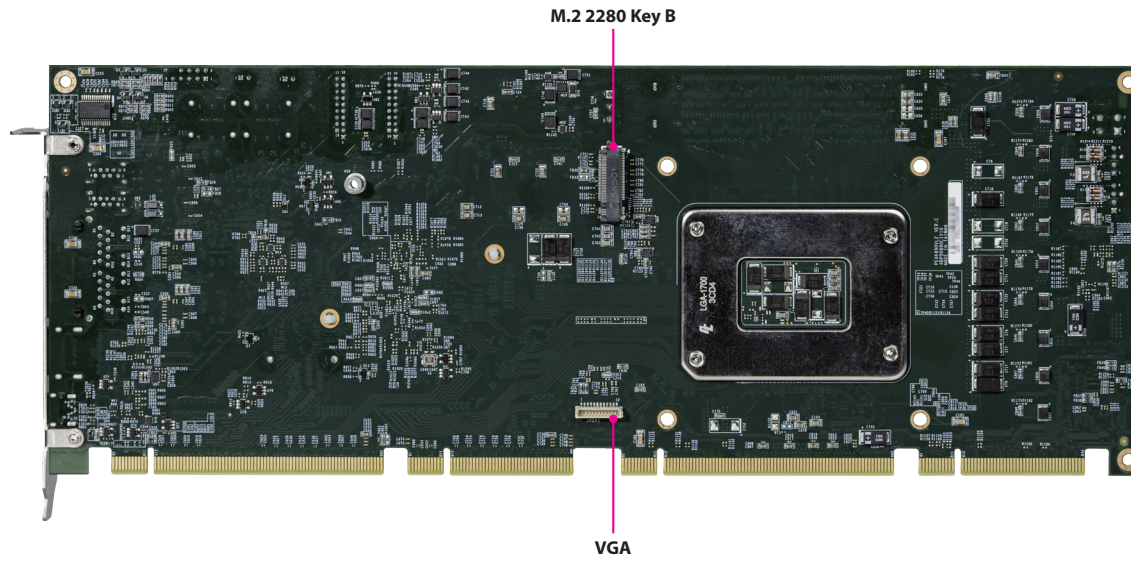
Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the PEAK 890VL2 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)
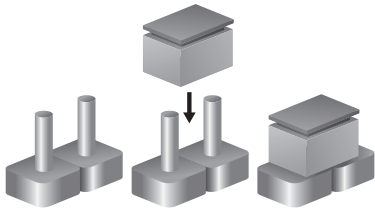
Three-Pin Jumpers: Pins 1 and 2 are Short
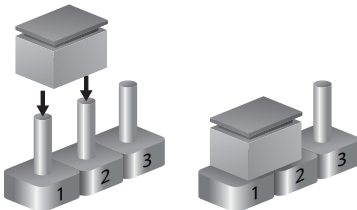
Locations of the Jumpers and Connectors

The following figures show the locations of the jumpers and connectors for PEAK 890VL2. Refer to this chapter for detailed pin settings and definitions of connectors marked in pink on these figures.

CN2

JVGA1
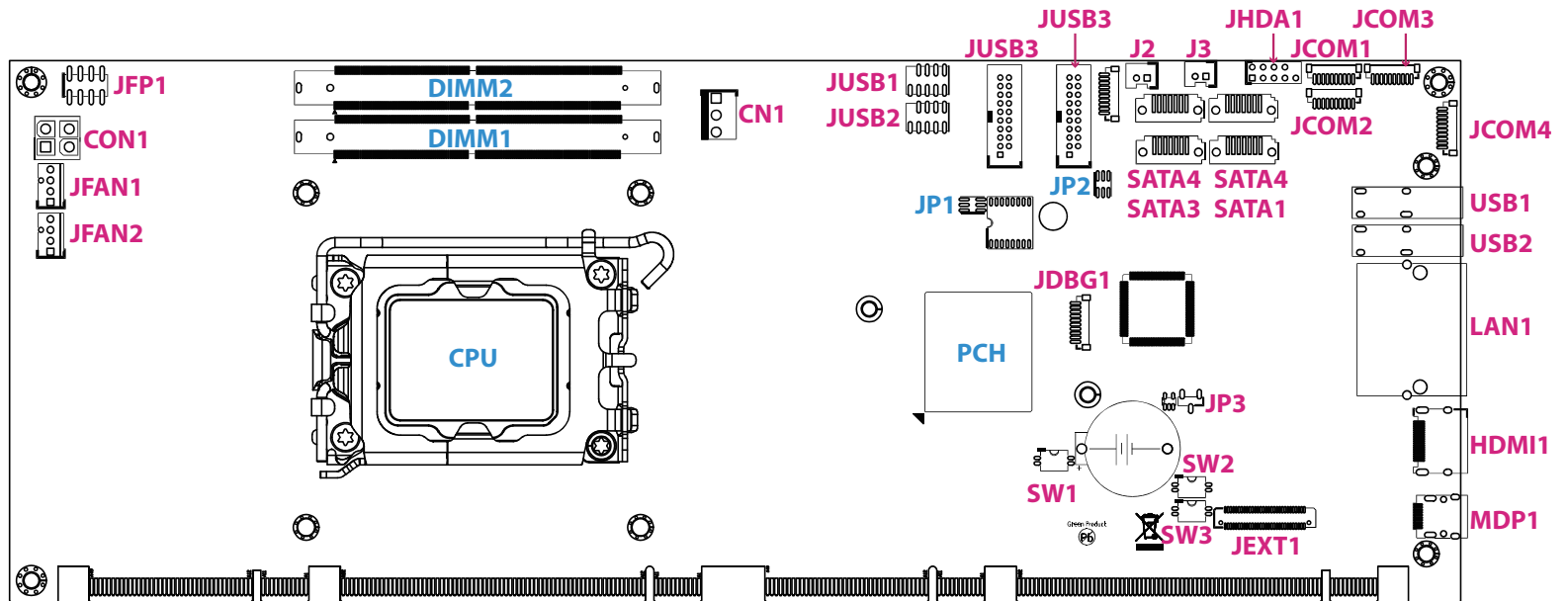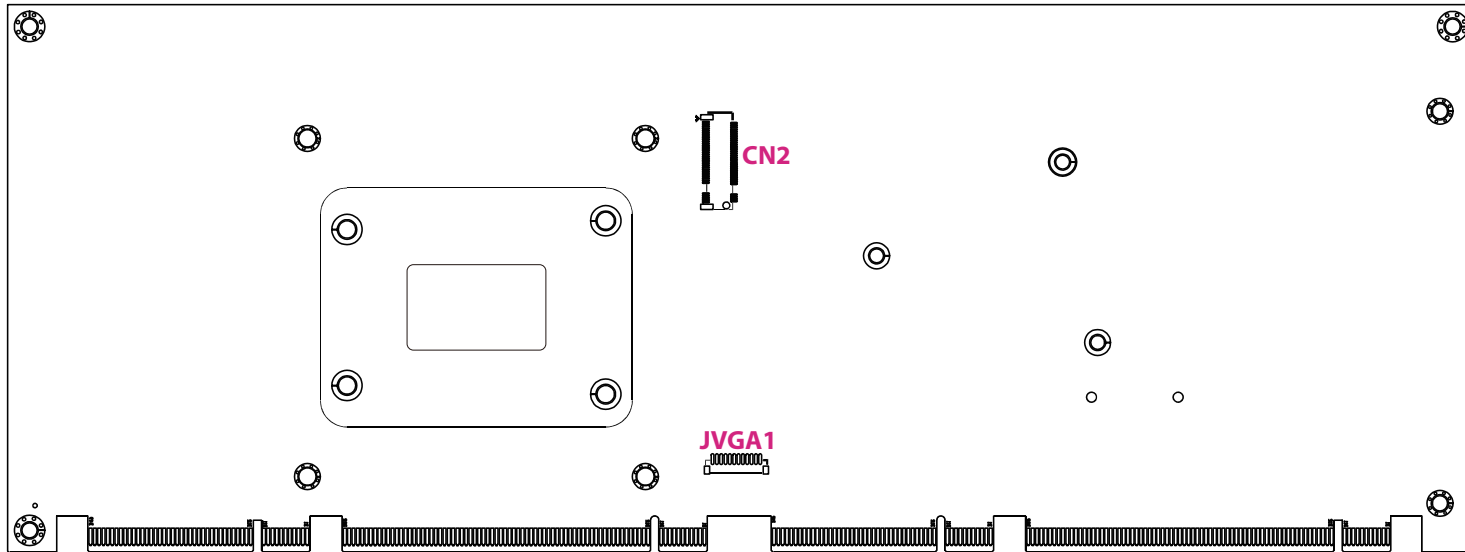
Jumpers

AT/ATX Select

Connector type: 1x3 3-pin header
Connector location: JP3

1 ▢ ○ ○ 3

Pin	Settings
1-2 On	AT Mode
2-3 On	ATX Mode (default)

Clear CMOS

Connector location: SW1
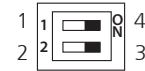
Pin	Settings
1-4 / 2-3 Off	Normal (default)
1-4 / 2-3 On	Clear CMOS

PCIe x16 Configuration

Connector location: SW2, SW3
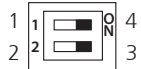
PCIe lanes		DIP Switch			
		SW2		SW3	
x16 / x8	x4 / x1	1-4	2-3	1-4	2-3
One PCIe x16	One PCIe x4	Off	Off	Off	Off
One PCIe x16	Four PCIe x1	Off	On	Off	Off
Two PCIe x8	One PCIe x4	On	Off	Off	Off
Two PCIe x8	Four PCIe x1	On	On	Off	Off
Control by Backplane (default)	One PCIe x4	Off	Off	On	Off
Control by Backplane	Four PCIe x1	Off	On	On	Off
Not support		N/A	N/A	N/A	On

1. PCIe x16 / x8 control by backplane, boot from BIOS 1 (one PCIe x4)
2. The motherboard of the model with the built-in H610E version do not support two PCIe x8

Connector Pin Definitions

External Connectors

HDMI Port

Connector type: HDMI1.4
Connector location: HDMI1

Pin	Definition	Type	Description
1	HDMITX2P	O	TMDS Data 2P
2	GND	P	TMDS Data 2 Shield
3	HDMITX2N	O	TMDS Data 2N
4	HDMITX1P	O	TMDS Data 1P
5	GND	P	TMDS Data 1 Shield
6	HDMITX1N	O	TMDS Data 1N
7	HDMITX0P	O	TMDS Data 0P
8	GND	P	TMDS Data 0 Shield
9	HDMITX0N	O	TMDS Data 0N
10	HDMICLKP	O	TMDS Clock P

Pin	Definition	Type	Description
11	GND	P	TMDS Clock Shield
12	HDMICLKN	O	TMDS Clock N
13	NC	I/O	CEC
14	NC		Reserved
15	HDMICLK	I/O	SCL
16	HDMISDA	I/O	SDA
17	GND	P	DDC/CEC Ground
18	HDMI PWR	P	+5V
19	HDMIHPD	I	Hot Plug Detect

Dual LAN Port

Connector type: RJ45
Connector location: LAN1
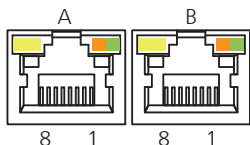
Act (Left)	Status
Blinking yellow	Data activity
Off	No activity

Link (Right)	Status
Steady green	2.5G network link
Steady green	1G network link
Steady orange	100Mbps network link
Off	10Mbps or no link

LAN1(A)

Pin	Definition	Type	Description
A1	LAN1_MDIAP	I/O	TX1P
A2	LAN1_MDIAN	I/O	TX1N
A3	LAN1_MDIBP	I/O	TX2P
A4	LAN1_MDIBN	I/O	TX2N
A5	LAN1_TCT	P	CT
A6	LAN1_TCTG	P	CT GND
A7	LAN1_MDICP	I/O	TX3P
A8	LAN1_MDICN	I/O	TX3N
A9	LAN1_MDIDP	I/O	TX4P
A10	LAN1_MDIDN	I/O	TX4N
A11	LAN1_LNK2500L	I	LED_O+/G-
A12	LAN1_LNK100L	I	LED_O-/G+
A13	LAN1_LEDACT	I	LED_Y-
A14	LAN1_LEDPWR	I	LED_Y+

LAN2(B)

Pin	Definition	Type	Description
B1	LAN2_MDIAP	I/O	TX1P
B2	LAN2_MDIAN	I/O	TX1N
B3	LAN2_MDIBP	I/O	TX2P
B4	LAN2_MDIBN	I/O	TX2N
B5	LAN2_TCT	P	CT
B6	LAN2_TCTG	P	CT GND
B7	LAN2_MDICP	I/O	TX3P
B8	LAN2_MDICN	I/O	TX3N
B9	LAN2_ MDIDP	I/O	TX4P
B10	LAN2_MDIDN	I/O	TX4N
B11	LAN2_LNK2500L	I	LED_O+/G-
B12	LAN2_LNK100L	I	LED_O-/G+
B13	LAN2_LEDACT	I	LED_Y-
B14	LAN2_LEDPWR	I	LED_Y+

Mini DisplayPort

Connector type: Mini DisplayPort1.4a
Connector location: MDP1
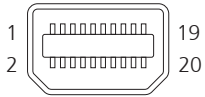
Pin	Definition	Type	Description
1	GND	P	Digital GND
3	DPTXP0	O	DP Lane 0P
5	DPTXN0	O	DP Lane 0N
7	GND	P	Digital GND
9	DPTXP1	O	DP Lane 1P
11	DPTXN1	O	DP Lane 1N
13	GND	P	Digital GND
15	DPTXP2	O	DP Lane 2P
17	DPTXN2	O	DP Lane 2N
19	GND	P	Digital GND

Pin	Definition	Type	Description
2	DPHPD	I	Hot plug detect
4	CFG1	O	CONFIG1
6	CFG2	O	CONFIG2
8	GND	P	Digital GND
10	DPTXP3	O	DP Lane 3P
12	DPTXN3	O	DP Lane 3N
14	GND	P	Digital GND
16	DPAUXP	I/O	Auxiliary channel P
18	DPAUXN	I/O	Auxiliary channel N
20	DP PWR	P	+3.3V

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USB 3.2 Ports

Connector type: USB 3.2 Gen 2x1
Connector location: USB1, USB2

5 ▢ 9
1 ▢ 4
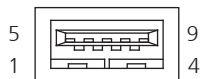
Pin	Definition	Type	Description
1	VBUS	P	+5V
2	DN	I/O	USB2.0 DN
3	DP	I/O	USB2.0 DP
4	GND	P	Digital GND
5	SSRXN	I	USB3.0 RXN
6	SSRXP	I	USB3.0 RXP
7	GND	P	Digital GND
8	SSTXN	O	USB3.0 TXN
9	SSTXP	O	USB3.0 TXP

Internal Connectors

5V Power Input Connector

Connector type: 1x3 3-pin header
Connector location: CN1

3 ⬚⬚⬚ 1
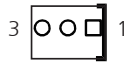
Pin	Definition	Type	Description
1	VCC5	P	+5V
2	GND	P	Digital GND
3	VCC5	P	+5V

NGFF Connector (R680E/ Q670E PCH Model)

Connector type: M.2 Key M 2280
Connector location: CN2

Pin	Definition	Type	Description
1	GND	P	Digital GND
3	GND	P	Digital GND
5	PCIERXN3	I	PCIe RX3 Signals
7	PCIERXP3	I	PCIe RX3 Signals
9	GND	P	Digital GND
11	PCIETXN3	I	PCIe TX3 Signals
13	PCIETXP3	I	PCIe TX3 Signals
15	GND	P	Digital GND
17	PCIERXN2	I	PCIe RX2 Signals
19	PCIERXP2	I	PCIe RX2 Signals
21	GND	P	Digital GND
23	PCIETXN2	I	PCIe TX2 Signals
25	PCIETXP2	I	PCIe TX2 Signals

Pin	Definition	Type	Description
2	VCC3_M2	P	+3.3V
4	VCC3_M2	P	+3.3V
6	NC		
8	NC		
10	M2_LEDL	O	HDD LED
12	VCC3_M2	P	+3.3V
14	VCC3_M2	P	+3.3V
16	VCC3_M2	P	+3.3V
18	VCC3_M2	P	+3.3V
20	NC		
22	NC		
24	NC		
26	NC		

Continued on next page

Pin	Definition	Type	Description
27	GND	P	Digital GND
29	PCIERXN1	I	PCIe RX1 Signals
31	PCIERXP1	I	PCIe RX1 Signals
33	GND	P	Digital GND
35	PCIETXN1	I	PCIe TX1 Signals
37	PCIETXP1	I	PCIe TX1 Signals
39	GND	P	Digital GND
41	PCIERXN0	I	PCIe RX0 Signals
43	PCIERXP0	I	PCIe RX0 Signals
45	GND	P	Digital GND
47	PCIETXN0	I	PCIe TX0 Signals
49	PCIETXP0	I	PCIe TX0 Signals
51	GND	P	Digital GND

Pin	Definition	Type	Description
28	NC		
30	NC		
32	NC		
34	NC		
36	NC		
38	DEVSLP	O	Device Sleep Control
40	NC		
42	NC		
44	NC		
46	NC		
48	NC		
50	M2RSTL	O	PCIe Reset
52	CLKREQL	I	Clock Request

Continued on next page

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Pin	Definition	Type	Description
53	PCIECLKN3	O	PCIe Clock
55	PCIECLKP3	O	PCIe Clock
57	GND	P	Digital GND
59	KEY		
61	KEY		
63	KEY		
65	KEY		
67	NC		
69	PU	O	Host Interface Indication
71	GND	P	Digital GND
73	GND	P	Digital GND
75	GND	P	Digital GND

Pin	Definition	Type	Description
54	M2WAKEL	O	PCIe WAKE#
56	NC		
58	NC		
60	KEY		
62	KEY		
64	KEY		
66	KEY		
68	SUSCLK	O	32.768KHz clock supply
70	VCC3_M2	P	+3.3V
72	VCC3_M2	P	+3.3V
74	VCC3_M2	P	+3.3V

ATX Power Input

Connector type: 2x2 4-pin header
Connector location: CON1

SATA Power

Connector type: 1x2 2-pin header
Connector location: J2, J3
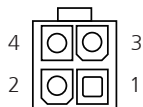
Pin	Definition	Type	Description
1	GND	P	Digital GND
2	GND	P	Digital GND
3	VCC12	P	+12V
4	VCC12	P	+12V

Pin	Definition	Type	Description
1	VCC5	P	+5V
2	GND	P	Digital GND

COM Ports

Connector type: 1x10 10-pin header
Connector location: JCOM1, JCOM2, JCOM3, JCOM4
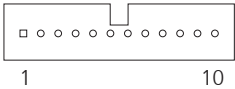
JCOM1 ~ JCOM4 (RS232)

Pin	Definition	Type	Description
1	DCD	I	Data Carrier Detect
2	RXD	I	Data Receiver
3	TXD	O	Data Transmit
4	DTR	O	Data Terminal Ready
5	GND	P	Digital GND
6	DSR	I	Data Set Ready
7	RTS	O	Request To Send
8	CTS	I	Clear To Send
9	RI	I	Ring Indicator
10	VCC5	P	+5V

JCOM1 ~ JCOM2 (RS422)

Pin	Definition	Type	Description
1	TX-	O	RS422 TX-
2	TX+	O	RS422 TX+
3	RX+	I	RS422 RX+
4	RX-	I	RS422 RX-
5	GND	P	Digital GND

JCOM1 ~ JCOM2 (RS485)

Pin	Definition	Type	Description
1	D-	I/O	RS485 D-
2	D+	I/O	RS485 D+
3	NC		
4	NC		
5	GND	P	Digital GND

Debug Port

Connector type: 1x10 10-pin header
Connector location: JDBG1
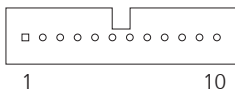
Pin	Definition	Type	Description
1	GND	P	Digital GND
2	PLTRSTN	O	Platform Reset
3	ESPICLK	O	eSPI Clock
4	ESPICS0L	O	eSPI Chip Select
5	ESPIIO3	I/O	eSPI Data 3
6	ESPIIO2	I/O	eSPI Data 2
7	ESPIIO1	I/O	eSPI Data 1
8	ESPIIO0	I/O	eSPI Data 0
9	ESPIRSTL	O	eSPI Reset
10	3VSB	P	+3.3V

High Speed Connector

Connector type: 2x30 60-pin header
Connector location: JEXT1

Pin	Definition	Type	Description
1	PCIETXP21	O	PCIe TX1 Signals
3	PCIETXN21	O	PCIe TX1 Signals
5	GND	P	Digital GND
7	PCIETXP22	O	PCIe TX2 Signals
9	PCIETXN22	O	PCIe TX2 Signals
11	GND	P	Digital GND
13	PCIETXP23	O	PCIe TX3 Signals
15	PCIETXN23	O	PCIe TX3 Signals
17	GND	P	Digital GND
19	PCIETXP24	O	PCIe TX4 Signals
21	PCIETXN24	O	PCIe TX4 Signals
23	GND	P	Digital GND
25	PCIETXP25	O	PCIe TX5 Signals
27	PCIETXN25	O	PCIe TX5 Signals
29	GND	P	Digital GND

Pin	Definition	Type	Description
2	PCIERXP21	I	PCIe RX1 Signals
4	PCIERXN21	I	PCIe RX1 Signals
6	GND	P	Digital GND
8	PCIERXP22	I	PCIe RX2 Signals
10	PCIERXN22	I	PCIe RX2 Signals
12	GND	P	Digital GND
14	PCIERXP23	I	PCIe RX3 Signals
16	PCIERXN23	I	PCIe RX3 Signals
18	GND	P	Digital GND
20	PCIERXP24	I	PCIe RX4 Signals
22	PCIERXN24	I	PCIe RX4 Signals
24	GND	P	Digital GND
26	PCIERXP25	I	PCIe RX5 Signals
28	PCIERXN25	I	PCIe RX5 Signals
30	GND	P	Digital GND

Continued on next page

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Pin	Definition	Type	Description
31	PCIETXP26	O	PCIe TX6 Signals
33	PCIETXN26	O	PCIe TX6 Signals
35	GND	P	Digital GND
37	PCIETXP27	O	PCIe TX7 Signals
39	PCIETXN27	O	PCIe TX7 Signals
41	GND	P	Digital GND
43	PCIETXP28	O	PCIe TX8 Signals
45	PCIETXN28	O	PCIe TX8 Signals
47	GND	P	Digital GND
49	PCIETXP9	O	PCIe TX9 Signals
51	PCIETXN9	O	PCIe TX9 Signals
53	GND	P	Digital GND
55	PCIECLKP12	O	PCIe Clock
57	PCIECLKN12	O	PCIe Clock
59	WAKE	O	PCIe Wake Up

Pin	Definition	Type	Description
32	PCIERXP26	I	PCIe RX6 Signals
34	PCIERXN26	I	PCIe RX6 Signals
36	GND	P	Digital GND
38	PCIERXP27	I	PCIe RX7 Signals
40	PCIERXN27	I	PCIe RX7 Signals
42	GND	P	Digital GND
44	PCIERXP28	I	PCIe RX8 Signals
46	PCIERXN28	I	PCIe RX8 Signals
48	GND	P	Digital GND
50	PCIERXP9	I	PCIe RX9 Signals
52	PCIERXN9	I	PCIe RX9 Signals
54	GND	P	Digital GND
56	PCIECLKP13	O	PCIe Clock
58	PCIECLKN13	O	PCIe Clock
60	PERST	I	PCIe Reset

Fan Connector

Connector type: 1x4 4-pin header
Connector location: JFAN1, JFAN2

Front Panel Header

Connector type: 2x4 8-pin header
Connector location: JFP1
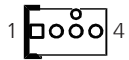
Pin	Definition	Type	Description
1	GND	P	Digital GND
2	VCC12	P	+12V
3	FANTACH	I	FAN TACH Detect
4	FANPWM	O	FAN PWM Control
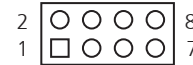
Pin	Definition	Type	Description
1	HDLEDP		HDD LED+
2	PWRLEDP	O	Power LED+
3	HDLEDN	O	HDD LED-
4	GND	P	Power LED-
5	GND	P	Digital GND
6	PWRBTNL	I	Power Button
7	SHB_RSTL	I	Reset Button
8	GND	P	Digital GND

Audio Header

Connector type: 2x5 10-pin header
Connector location: JHDA1
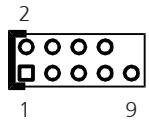
Pin	Definition	Type	Description
1	HDASDO	O	HD Audio Data Out
2	VCC5	P	+5V
3	HDARSTL	O	HD Audio Reset
4	GND	P	Digital GND
5	HDASYNC	O	HD Audio Sync
6	VCC12	P	+12V
7	HDASDI0	I	HD Audio Data In 0
8	HDASDI1	I	HD Audio Data In 1
9	HDABCLK	O	HD Audio Bit Clock

USB 2.0 Header

Connector type: 2x5 10-pin header
Connector location: JUSB1, JUSB2
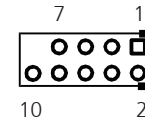
Pin	Definition	Type	Description
1	VBUS1	P	+5V
2	VBUS2	P	+5V
3	DN1	I/O	USB2.0 DN
4	DN2	I/O	USB2.0 DN
5	DP1	I/O	USB2.0 DP
6	DP2	I/O	USB2.0 DP
7	GND	P	Digital GND
8	GND	P	Digital GND
9	Remove		
10	NC		

USB 3.2 Gen 1 Header

Connector type: 2x10 20-pin header
Connector location: JUSB3, JUSB4
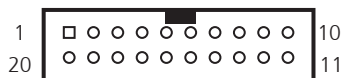
Pin	Definition	Type	Description
1	VBUS	P	+5V
2	SSRXN1	I	USB3.0 RXN
3	SSRXP1	I	USB3.0 RXP
4	GND	P	Digital GND
5	SSTXN1	O	USB3.0 TXN
6	SSTXP1	O	USB3.0 TXP
7	GND	P	Digital GND
8	DN1	I/O	USB2.0 DN
9	DP1	I/O	USB2.0 DP
10	NC		

Pin	Definition	Type	Description
11	DP2	I/O	USB2.0 DP
12	DN2	I/O	USB2.0 DN
13	GND	P	Digital GND
14	SSTXP2	O	USB3.0 TXP
15	SSTXN2	O	USB3.0 TXN
16	GND	P	Digital GND
17	SSRXP2	I	USB3.0 RXP
18	SSRXN2	I	USB3.0 RXN
19	VBUS	P	+5V
20			

VGA Header

Connector type: 1x12 12-pin header
Connector location: JVGA1

SATA Connector

Connector location: SATA1~SATA4
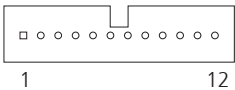
Pin	Definition	Type	Description
1	VGA_RED	O	RED
2	VGA_GREEN	O	GREEN
3	VGA_BLUE	O	BLUE
4	GND	P	Analog GND
5	GND	P	Analog GND
6	GND	P	Analog GND
7	VGA PWR	P	+5V
8	GND	P	Digital GND
9	VGA_HSYNC	O	HSYNC
10	VGA_SDA	I/O	Data
11	VGA_SCL	I/O	Clock
12	VGA_VSYNC	O	VSYNC

Pin	Definition	Type	Description
1	GND	P	Digital GND
2	SATATXP	O	SATA TXP
3	SATATXN	O	SATA TXN
4	GND	P	Digital GND
5	SATARXN	I	SATA RXN
6	SATARXP	I	SATA RXP
7	GND	P	Digital GND

Block Diagram
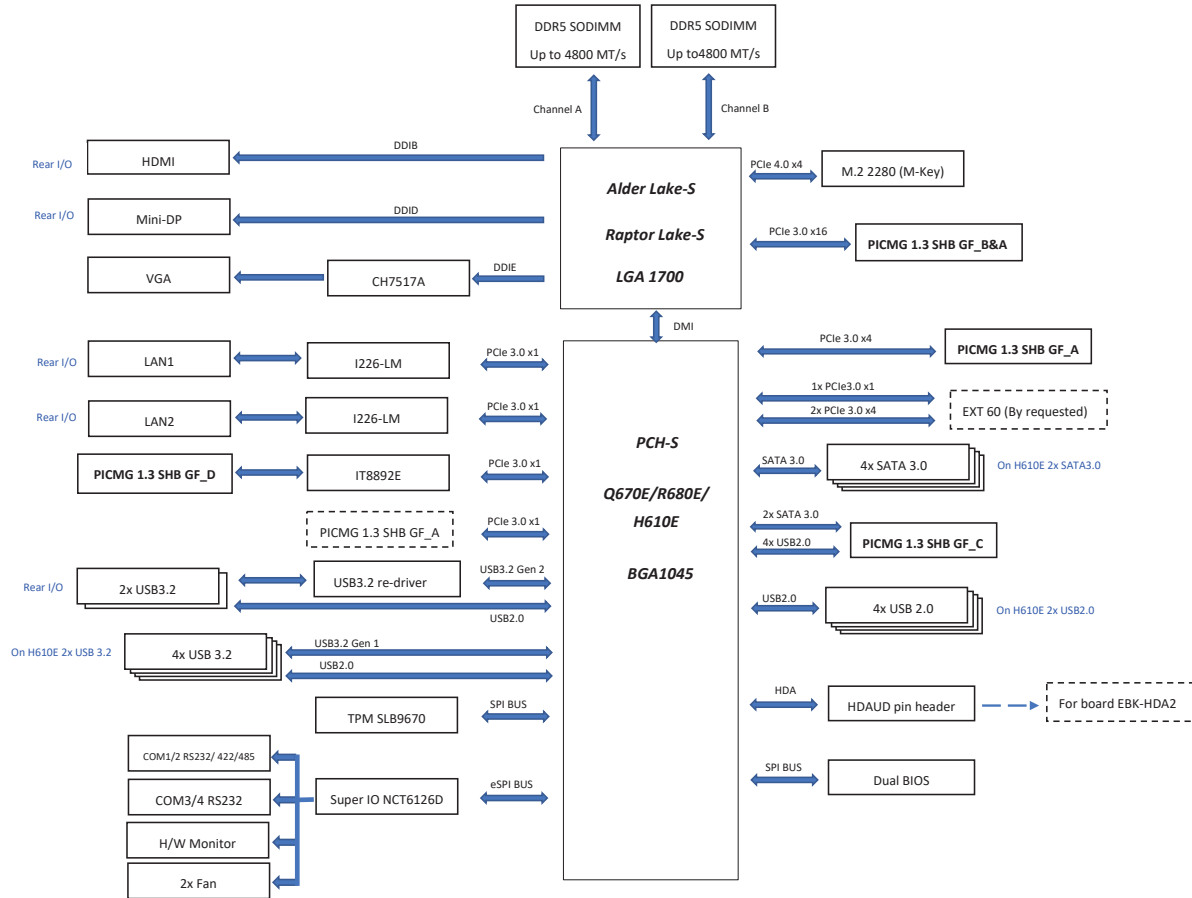
CHAPTER 3: BIOS SETUP

This chapter describes how to use the BIOS setup program for the PEAK 890VL2. 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 - AMI
  Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

  BIOS Information
  BIOS Vendor                    American Megatrends
  Core Version                   5.27
  Compliancy                     UEFI 2.8; PI 1.7
  Build Date and Time            05/09/2024 17:11:01
  Access Level                   Administrator
  Project Version                P890-009 x64

  Processor Information
  Name                           AlderLake DT
  Type                           12th Gen Intel(R)
                                 Core(TM) i7-12700TE
  Speed                          1400 MHz
  ID                             0x90672
  Stepping                       C0
  Microcode Revision             2C

  IGFX GOP Version               17.0.1081
  Total Memory                   65536 MB
  Memory Frequency               4800 MHz

  PCH Information
  Name                           PCH-S
  PCH SKU                        R680E
  Stepping                       B1

                              ++: 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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```

```
                        Aptio Setup - AMI
  Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

  Processor Information                          Set the Date. Use Tab to
  Name                           AlderLake DT    switch between Date elements.
  Type                           12th Gen Intel(R)  Default Ranges:
                                 Core(TM) i7-12700TE  Year: 1998-9999
  Speed                          1400 MHz         Months: 1-12
  ID                             0x90672          Days: Dependent on month
  Stepping                       C0               Range of Years may vary.
  Microcode Revision             2C

  IGFX GOP Version               17.0.1081
  Total Memory                   65536 MB
  Memory Frequency                4800 MHz

  PCH Information                                ++: Select Screen
  Name                           PCH-S           ↑↓: Select Item
  PCH SKU                        R680E           Enter: Select
  Stepping                       B1              +/-: Change Opt.
                                                 F1: General Help
  ME FW Version                  16.0.15.1620    F2: Previous Values
  ME Firmware SKU                Corporate SKU   F3: Optimized Defaults
                                                 F4: Save & Exit
  System Language                [English]       ESC: Exit

  System Date                    [Fri 05/24/2024]

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```

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 2005 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.
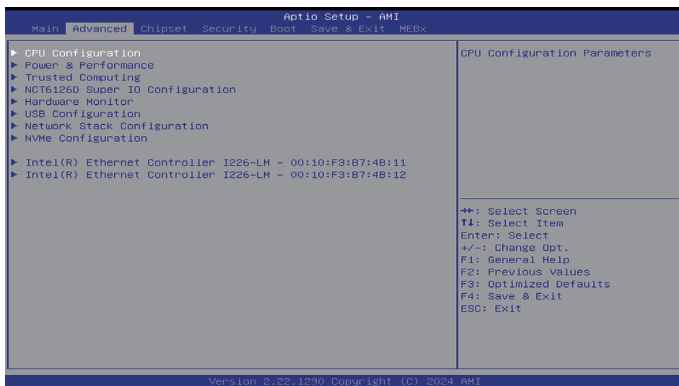
CPU Configuration

This section is used to configure the CPU.
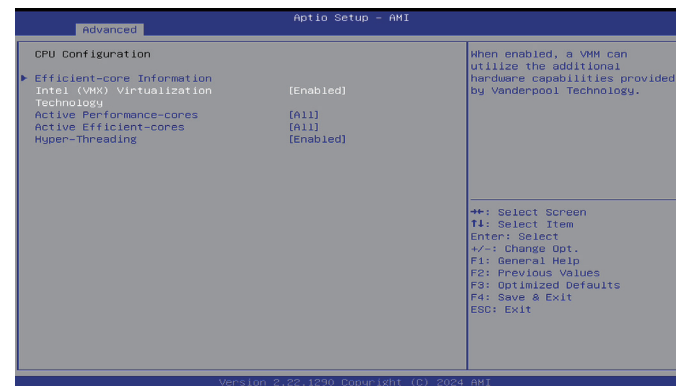
Efficient-core Information
Press to display the E-core information.

Intel (VMX) Virtualization Technology
When enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Active Performance-cores
Configure the performance cores.

Active Efficient-cores
Configure the efficient cores.

Hyper-Threading
Enable or disable hyper-threading technology.

Power & Performance

This section is used to configure the CPU power management features.

```
                        Aptio Setup - AMI
  Advanced

 Power & Performance                    CPU - Power Management Control
                                        Options
▶ CPU - Power Management Control




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



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```
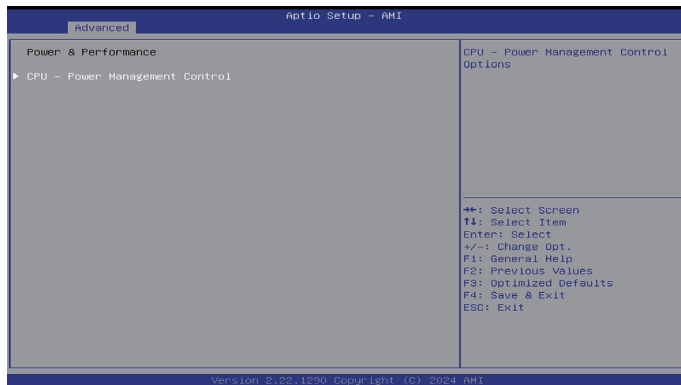
CPU - Power Management Control
Enter the CPU - Power Management Control submenu.

Trusted Computing

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

```
                              Aptio Setup — AMI
      Advanced

  TPM 2.0 Device Found                              Enables or Disables BIOS
  Firmware Version:          7.62                   support for security device.
  Vendor:                    IFX                    O.S. will not show Security
                                                    Device. TCG EFI protocol and
  Security Device Support    [Enable]               INT1A interface will not be
  Active PCR banks           SHA256                 available.
  Available PCR banks        SHA256

  SHA256 PCR Bank            [Enabled]

  Pending operation          [None]
  Platform Hierarchy         [Enabled]
  Storage Hierarchy          [Enabled]
  Endorsement Hierarchy      [Enabled]              ↔: Select Screen
  Physical Presence Spec Version  [1.3]             ↑↓: Select Item
  TPM 2.0 InterfaceType      [TIS]                  Enter: Select
  Device Select              [Auto]                 +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

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```

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

SHA256 PCR Bank
Enable or disable SHA256 PCR Bank.

Pending operation
Schedule an operation for the security device.

Platform Hierarchy
Enable or disable Platform Hierarchy.

Physical Presence Spec Version
Configure which physical presence spec version the OS will support. Please
note that some HCK tests might not support 1.3.

Device Select
TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict
support to TPM 2.0 devices. Auto will support both TPM 1.2 and 2.0
devices with the default set to TPM 2.0 devices if not found, and TPM 1.2
devices will be enumerated.

NCT6126D Super IO Configuration

This section is used to configure the serial ports.
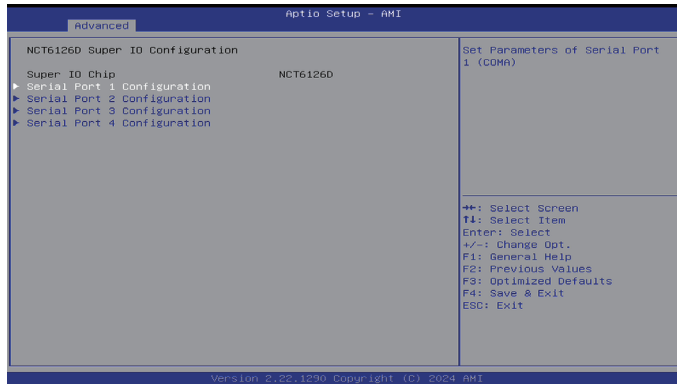
Super IO Chip
Displays the Super I/O chip used on the board.

Serial Port 1~4 Configuration
Enter the Serial Port 1/2/3/4 Configuration submenu.

Serial Port 1/2/3/4 Configuration
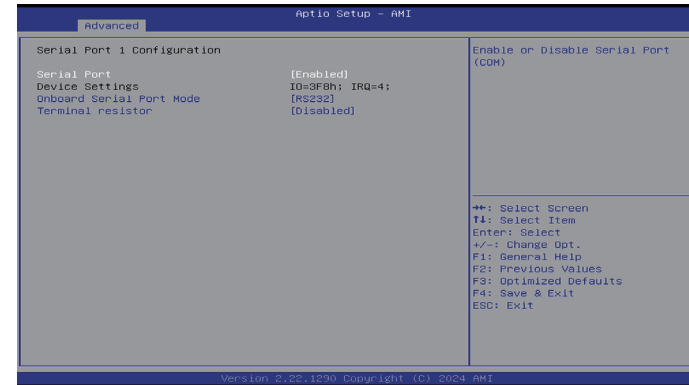
Serial Port (Port 1/2/3/4)
Enable or disable serial port.

Onboard Serial Port Mode (Port 1/2)
Select this to change the serial port mode to RS232, RS422 or RS485 Auto.

Terminal resistor (Port 1/2)
Enable or disable terminal resistor

Hardware Monitor

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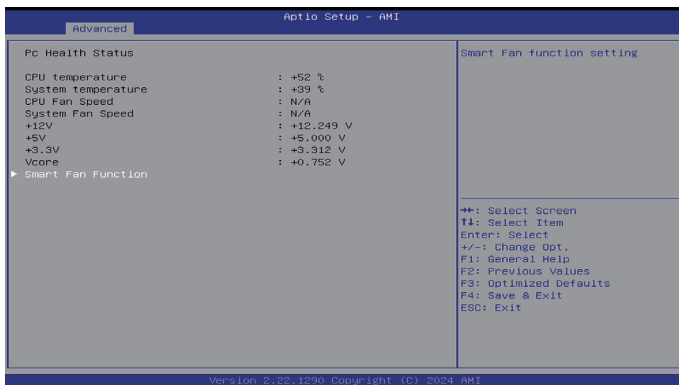
Smart Fan Function

Enter the Smart Fan Function submenu.

Smart Fan Function
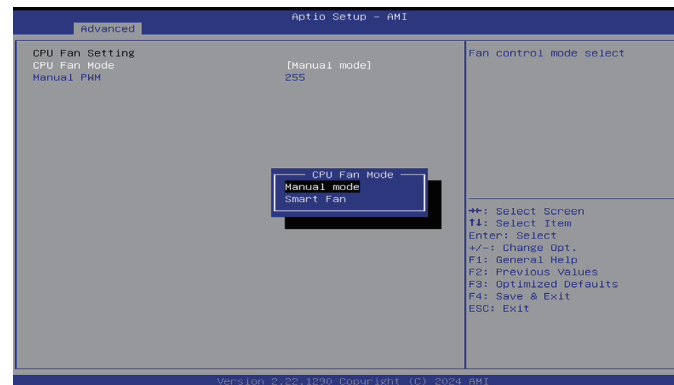
CPU Fan Mode

Fan control mode select.

Manual PWM

Fan will work with this manual PWM Value (0~255 for 0%~100%).

USB Configuration

This section is used to configure the USB.

```
                        Aptio Setup — AMI
   Advanced

 USB Configuration                                Enables Legacy USB support.
                                                  AUTO option disables legacy
 USB Module Version           31                  support if no USB devices are
                                                  connected. DISABLE option will
 USB Controllers:                                 keep USB devices available
     1 XHCI                                       only for EFI applications.
 USB Devices:
     1 Keyboard

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

 USB hardware delays and time-outs:
 Device reset time-out        [20 sec]            →←: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit


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```

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

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.

Device Reset Time-out
Select the USB mass storage device's start unit command timeout.

Network Stack Configuration

This section is used to configure the network stack.

```
                        Aptio Setup — AMI
   Advanced

 Network Stack               [Disabled]           Enable/Disable UEFI Network
                                                  Stack






                    ┌─── Network Stack ───┐
                    │ Disabled            │
                    │ Enabled             │
                    └─────────────────────┘        →←: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit


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```
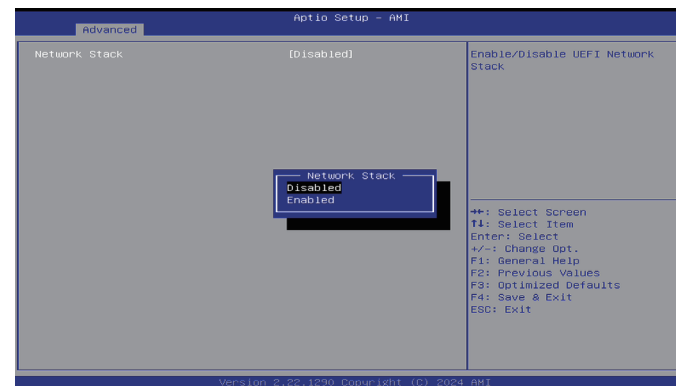
Network Stack
Enable or disable UEFI Network Stack. Once enabled, more options will be available for configurations.

NVMe Configuration

This section is used to configure the NVMe devices installed.

Intel(R) Ethernet Controller I226-LM

This section is used to display information of the Intel Ethernet controller.
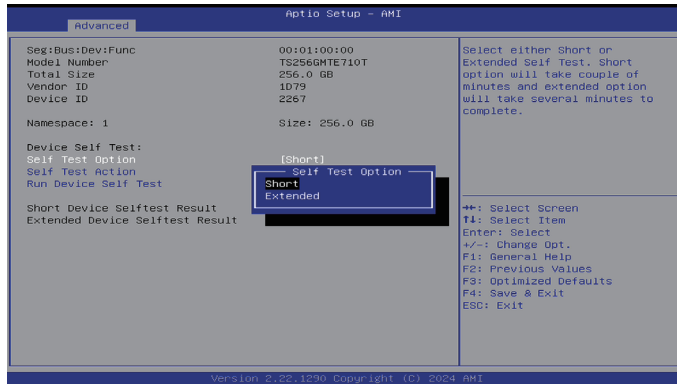
Self Test Option
Configure the method used for self test.

Short   Short option will take couple of minutes to complete.
Extended   Extended option will take several minutes to complete.

Self Test Action
Select either to test Controller alone or Controller and NameSpace. Selecting Controller NameSpace option will take lot longer to complete to test.

Run Device Self Test
Perform device self test for the corresponding option and action selected by user. Pressing <Esc> key will abort the test. Result shown below is the recent result logged in the device.

Chipset

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

```
                    Aptio Setup - AMI
      Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

  ▶ System Agent (SA) Configuration        System Agent (SA)
  ▶ PCH-IO Configuration                   Parameters




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

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```

System Agent (SA) Configuration
Enter the System Agent (SA) Configuration submenu.

PCH-IO Configuration
Enter the PCH-IO Configuration submenu.

System Agent (SA) Configuration

```
                    Aptio Setup - AMI
          Chipset

  System Agent (SA) Configuration          VMD Configuration settings
  ▶ VMD setup menu
  ▶ PCI Express Configuration

  VT-d                        [Enabled]



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

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```

VMD setup menu
Enter the VMD setup menu submenu.

PCI Express Configuration
Enter the PCI Express Configuration submenu.

VT-d
Enable or disable VT-d.

VMD Configuration

PCI Express Configuration
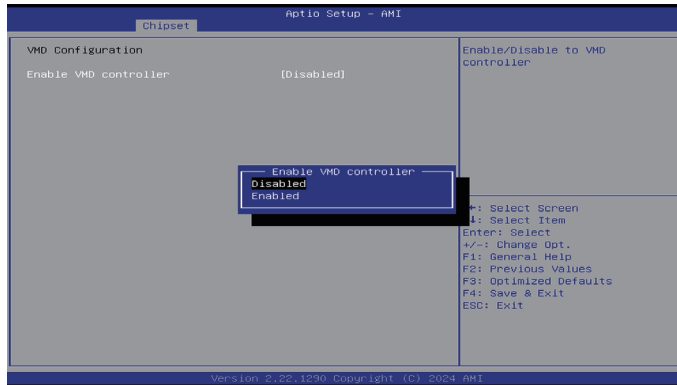
Enable VMD controller
Enable or disable VMD controller.
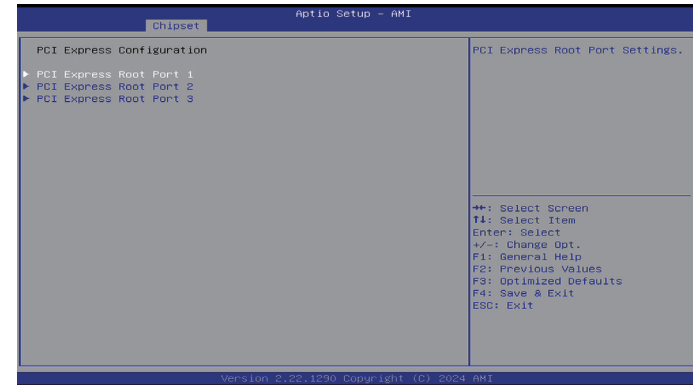
PCI Express Root Port 1~3
Enter the PCI Express Root Port 1/2/3 submenu.

PCI Express Configuration > PCI Express Root Port 1/2/3
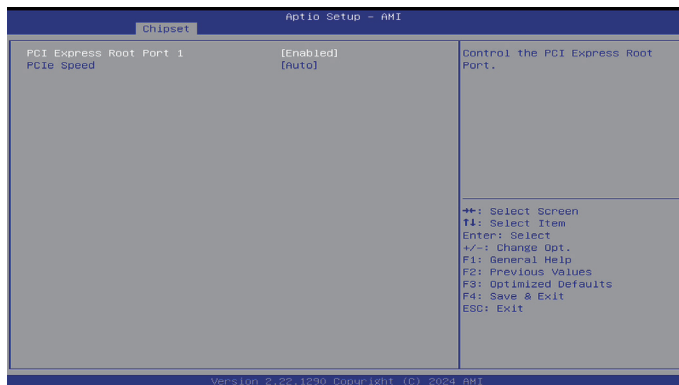
PCI Express Root Port 1/2/3
Enable or disable PCI Express Root Port.

PCIe Speed 1/2/3
Configure the PCIe speed.

PCH-IO Configuration
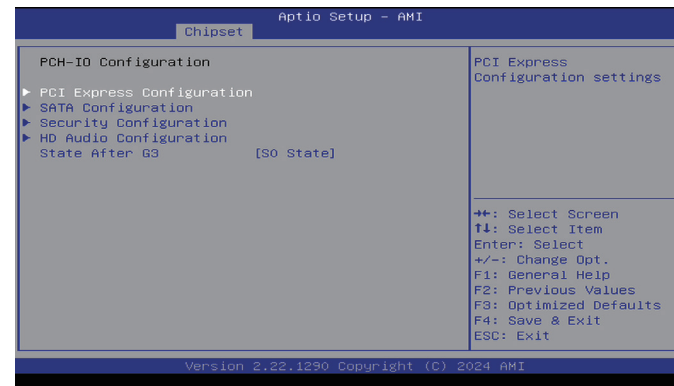
PCI Express Configuration
Enter the PCI Express Configuration submenu.

SATA Configuration
Enter the SATA Configuration submenu.

Security Configuration
Enter the Security Configuration submenu.

HD Audio Configuration
Enter the HD Audio Configuration submenu.

State After G3
Specify what state to go to when power is re-applied after a power failure (G3 state).

PCI Express Configuration

```
                    Aptio Setup - AMI
              Chipset

  PCI Express Configuration                  ▲  PCI Express Root Port
                                                Settings.
▶ PCI Express Root Port 5
  PCI Express Root Port      Shadowed by x2/x4 port
  6
  PCI Express Root Port      Shadowed by x2/x4 port
  7
  PCI Express Root Port      Shadowed by x2/x4 port
  8
▶ PCI Express Root Port 21
  PCI Express Root Port      Shadowed by x2/x4 port      ←→: Select Screen
  22                                                     ↑↓: Select Item
  PCI Express Root Port      Shadowed by x2/x4 port      Enter: Select
  23                                                     +/-: Change Opt.
  PCI Express Root Port      Shadowed by x2/x4 port      F1: General Help
  24                                                     F2: Previous Values
▶ PCI Express Root Port 25                            ▼  F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

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```

PCI Express Root Port 5~8 / 21~24 / 25~28
Configure the PCI Express Root Port.

PCI Express Root Port 5~8 / 21~24 / 25~28 > PCIe Speed
Configure the PCIe speed; the default is Gen 3.

SATA Configuration

```
                    Aptio Setup - AMI
              Chipset

  SATA Configuration                         ▲  Enable/Disable SATA
                                                Device.
  SATA Controller(s)       [Enabled]
  Serial ATA Port 1        Empty
  (Only for PCH
  Q670E/R680E)
     Software Preserve     Unknown
     Port 1                [Enabled]
     Hot Plug              [Disabled]
  Serial ATA Port 2        ADATA_ISSS332-
  (Only for PCH            (1024.2GB)
  Q670E/R680E)                                          ←→: Select Screen
     Software Preserve     SUPPORTED                     ↑↓: Select Item
     Port 2                [Enabled]                     Enter: Select
     Hot Plug              [Disabled]                    +/-: Change Opt.
  Serial ATA Port 3        Empty                         F1: General Help
     Software Preserve     Unknown                       F2: Previous Values
     Port 3                [Enabled]               ▼     F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

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```

SATA Controller(s)
Enable or disable SATA device.

Port 1/2/3/4/5/6
Enable or disable SATA port 1/2/3/4/5/6.

Hot Plug
Enable or disable hot plugging feature on SATA port (0 to port 6).

Security Configuration

```
                        Aptio Setup - AMI
            Chipset

  Security Configuration                    Enable will lock bytes
                                            38h-3Fh in the
  RTC Memory Lock          [Enabled]        lower/upper 128-byte
                                            bank of RTC RAM




                                            ↔: 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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```
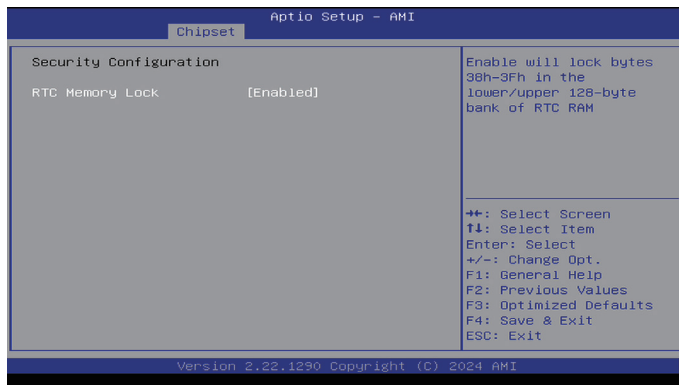
RTC Memory Lock
Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.

HD Audio Configuration

```
                        Aptio Setup - AMI
            Chipset

  HD Audio Subsystem Configuration Settings  Control Detection of
                                             the HD-Audio device.
  HD Audio                 [Enabled]         Disabled = HDA will be
                                             unconditionally disabled
                                             Enabled = HDA will be
                                             unconditionally enabled.




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

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```

HD Audio
Control Detection of the HD-Audio device.

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

Security

```
                          Aptio Setup - AMI
     Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

     Password Description                            Set Administrator Password

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

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```

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

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

Boot

```
                        Aptio Setup - AMI
    Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

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

    Boot Option Priorities
    Boot Option #1                [Windows Boot Manager
                                  (TS256GMTE710T)]
    Boot Option #2                [UEFI: Built-in EFI
                                  Shell]
    Fast Boot                     [Disable Link]

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


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```

Setup Prompt Timeout
Number of seconds to wait for setup activation key. 65535 (0xFFFF) means 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   Display OEM logo instead of the POST messages.
Disabled   Display 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
Enable or disable boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Save & Exit

```
                        Aptio Setup - AMI
      Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

    Save Options                            Exit system setup after saving
    Save Changes and Exit                   the changes.
    Discard Changes and Exit

    Save Changes and Reset
    Discard Changes and Reset

    Save Changes
    Discard Changes

    Default Options
    Restore Defaults
    Save as User Defaults                   →←: Select Screen
    Restore User Defaults                   ↑↓: Select Item
                                            Enter: Select
    Boot Override                           +/-: Change Opt.
    UEFI: Built-in EFI Shell                F1: General Help
    Windows Boot Manager (TS256GMTE710T)    F2: Previous Values
                                            F3: Optimized Defaults
                                            F4: Save & Exit
                                            ESC: Exit

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```
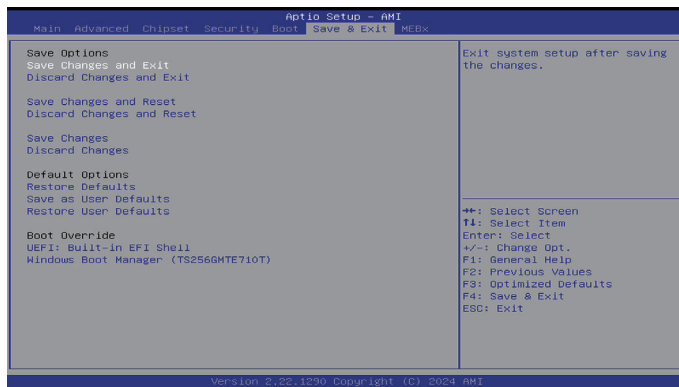
Save Changes and Exit
Exit system setup after saving the changes.

Discard Changes and Exit
Exit system setup without saving changes.

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

Discard Changes and Reset
Reset system setup without saving any changes.

Save Changes
Save changes done so far to any of setup options.

Discard Changes
Discard changes done so far to any of setup options.

Restore Defaults
Restore/load default values for all the setup options.

Save as User Defaults
Save the changes done so far as user defaults.

Restore User Defaults
Restore the user defaults to all the setup options.

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>.

Launch EFI Shell from Filesystem Device
To launch EFI shell from a filesystem device, select this field and press <Enter>.

MEBx

```
                           Aptio Setup - AMI
     Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

    Intel(R) ME Password                          MEBx Login




                                              →←: 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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```

Intel(R) ME Password
Log in to the MEBx. By default, the password is set to ADMIN. Note that
the password used here may differ from the BIOS password.