NexAIoT Co., Ltd.

Intelligent Platform & Services Business Unit

Marine Fanless Computer

CE-CL

User Manual

NexAIoT Co., Ltd.
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www.nexaiot.com

Contents

Chapter 3: BIOS Setup

PREFACE

Copyright

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NexAIoT Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: http://www.nexaiot.com. NexAIoT shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

Acknowledgements

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

NexAIoT RoHS Environmental Policy and Status Update

NexAIoT 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, NexAIoT 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 NexAIoT development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NexAIoT 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 NexAIoT 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 NexAIoT naming convention.

Warranty and RMA

NexAIoT Warranty Period

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

NexAIoT Return Merchandise Authorization (RMA)

- Customers shall enclose the "NexAIoT 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 "NexAIoT 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, NexAIoT 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 NexAIoT 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

NexAIoT 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: NexAIoT 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 NexAIoT 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, NexAIoT will return it to the customer without any charge.

Board Level

- Component fee: NexAIoT 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, NexAIoT 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.

Danger of explosion if battery is incorrectly replaced.
Replace 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 NexAIoT products, visit NexAIoT's website at www.nexaiot.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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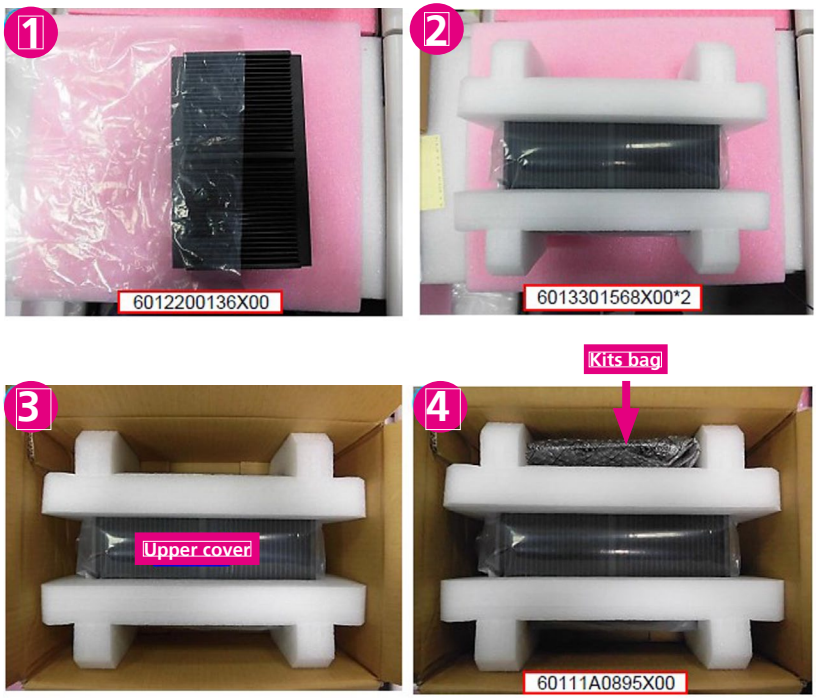
Package Contents

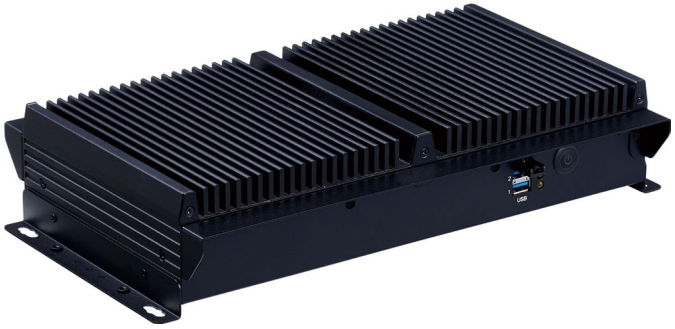
Before continuing, verify that the package you received is complete.



Chapter 1: Product Introduction

CE-CL

Overview



Key Features

- The 8th/9th generation Intel® Core™ Coffee Lake-S processor
- 2x 1G SFP
- 4x Gigabit Ethernet
- 2x DP
- 4x USB 3.0 Type-A
- 1x USB3.0 Type-C
- 1x RS232/422/485 isolated
- DDR4 supported
- M.2 SATA supported
- Built in 24VDC or 115~230VAC power input
- IEC-60945 maritime standards compliance
- Onboard TPM

Specifications

System

- 8th/9th generation Intel® Core® Coffee Lake-S Processor
- AMI BIOS
- LAN chip: 4x Intel® I210-IT Gigabit LAN + 2x Intel® 210-IS 1GB SFP
  - Ethernet interface: 10/100/1000 Mbps
  - Support wake up on LAN

Memory

- 2x DDR4-2666 SO-DIMM socket, support up to 32GB, non-ECC and un-buffered

Graphics

- Intel® HD Graphics

Watchdog timer

- Watchdog timeout can be programmable by software from 1 second to 255 seconds and from 1 minute to 255 minutes (tolerance 15% under room temperature 25°C)

H/W Status Monitor

- Monitoring system temperature and voltage

I/O Interface Front

- 4x USB 3.0 Type-A connector
- Power on/off switch

I/O Interface Rear

- Ethernet: 4x RJ45/2x1Gb SFP
- DisplayPort: 2x DP Port
- 1x USB3.0 Type-C connector (DP compatible)
- COM: 1x RS232/422/485
- Fan/Buzzer connector: 4-pin Phoenix terminal blocks
- 3-pin Phoenix terminal blocks (24 VDC) or IEC power connector (115-230 VAC)

Storage

- 2x M.2 SATA slots (1x M.2 2280, B key(PCIe + SATA signal)+1x M.2 2242, B key (SATA))

Device

- 1x SATA M.2 connector
- 1x mini-PCIe connector

Mechanical & Environmental

- Black RAL9005, extruded and painted aluminium housing
- IP20 (IP22 with optional brackets mounted)
- 1Grms @ random condition, 5~500Hz, 2hr/axis (operating/non-operating)
- IEC 68 2-27
  - 30G @ wall mount, half sine, 11ms
- Operating temperature: -10°C to 55°
- Storage temperature: -25°C to 75°
- Operating humidity: 10%~90% relative humidity, non-condensing
- Dimension: 322.3 x 168.8 x 59mm
- Weight: 5KG

Power Requirements

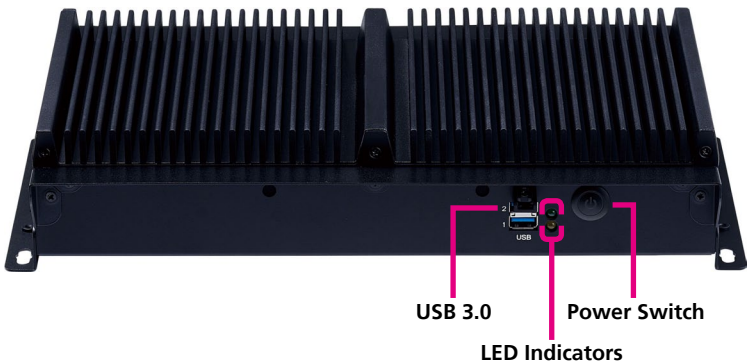
- Power input: input voltage, 24VDC or 115~230VAC
- Reverse polarity protection
- Galvanic isolated
- Power consumption: 35W

Certifications

- CE approval
- FCC Class A
- IEC 60945 maritime standards compliance

Knowing Your CE-CL AC

Front



Power Switch

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

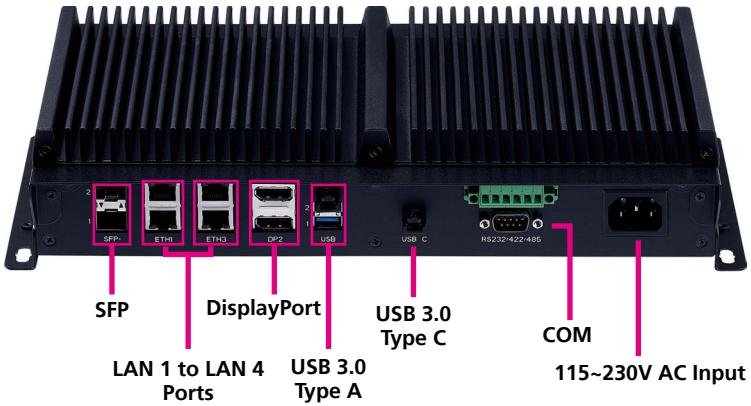
LED Indicators

Indicates the power status and hard drive activity of the system.

USB 3.0 Ports

Used to connect the system with USB 3.0/2.0/1.1 devices.

Rear



SFP

Used to connect a SFP module.

LAN 1 to LAN 4 Ports

Used to connect the system to a local area network.

DisplayPort

Used to connect a compatible display device.

USB 3.0 Ports

Used to connect the system with USB 3.0/2.0 devices.

COM Port

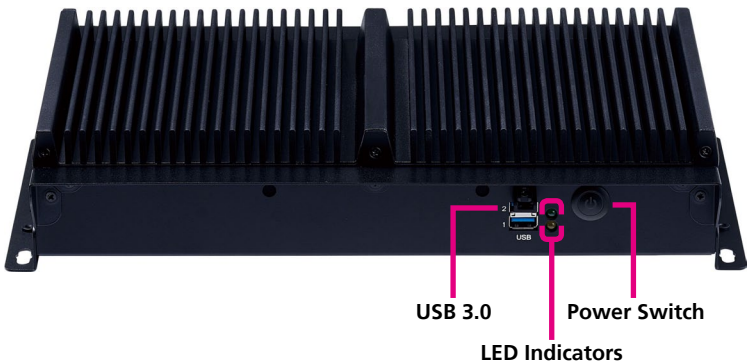
Serial DB9 port used to connect RS232/422/485 compatible devices.

115~230V AC Input

Used to plug a AC power cord.

Knowing Your CE-CL DC

Front



Power Switch

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

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USB 3.0 Ports

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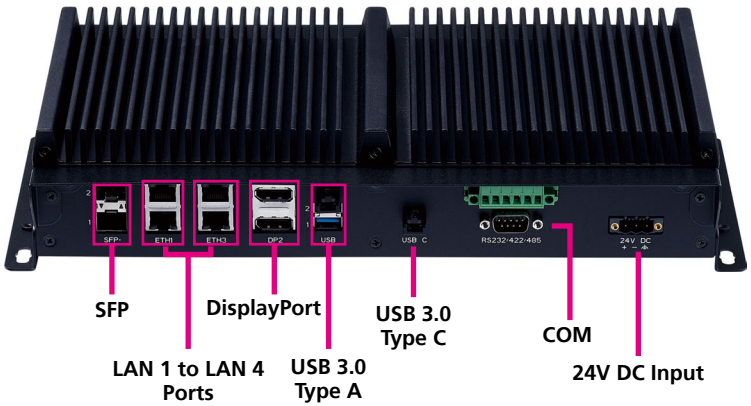
Rear



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USB 3.0 Ports

Used to connect the system with USB 3.0/2.0 devices.

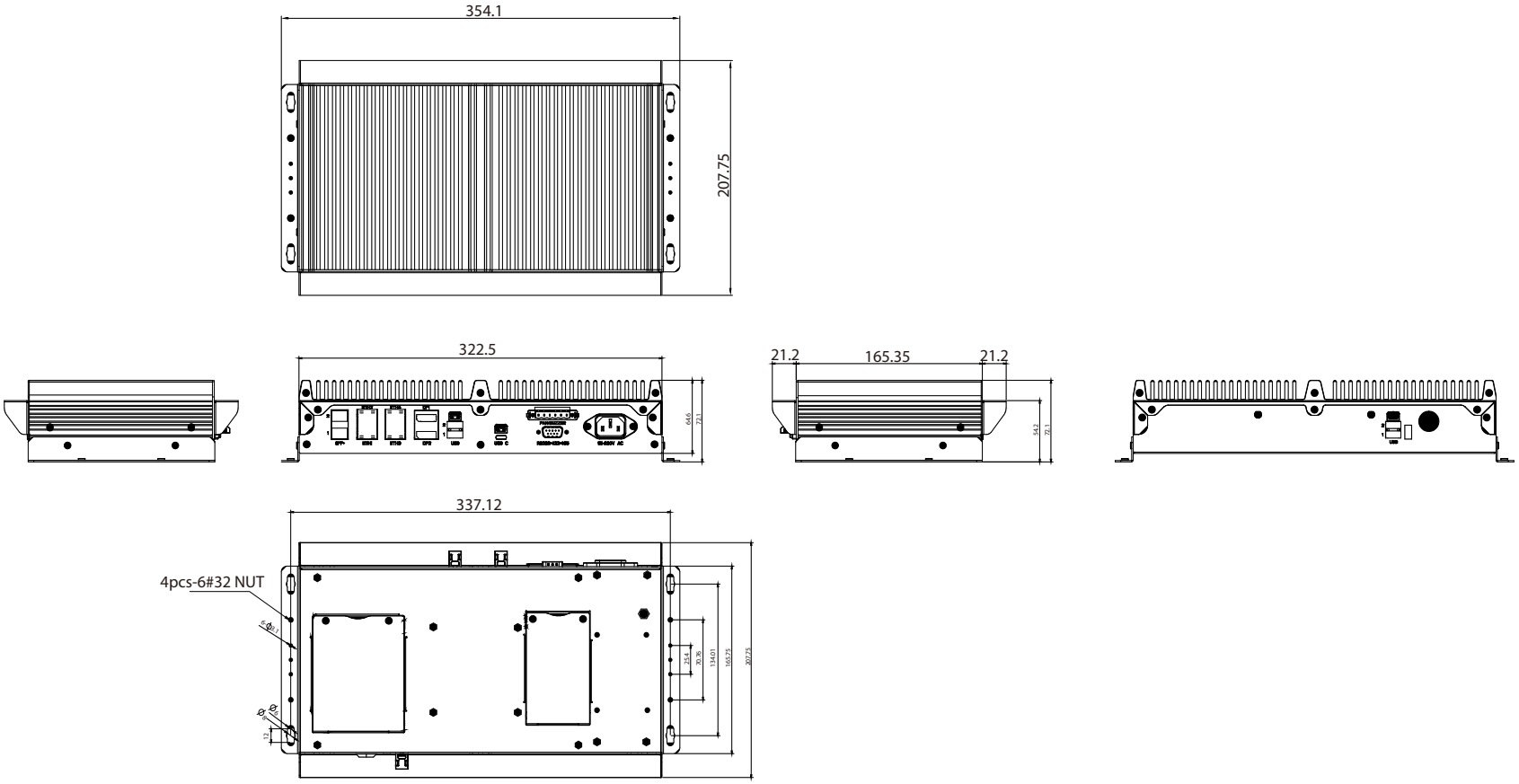
COM Port

Serial DB9 port used to connect RS232/422/485 compatible devices.

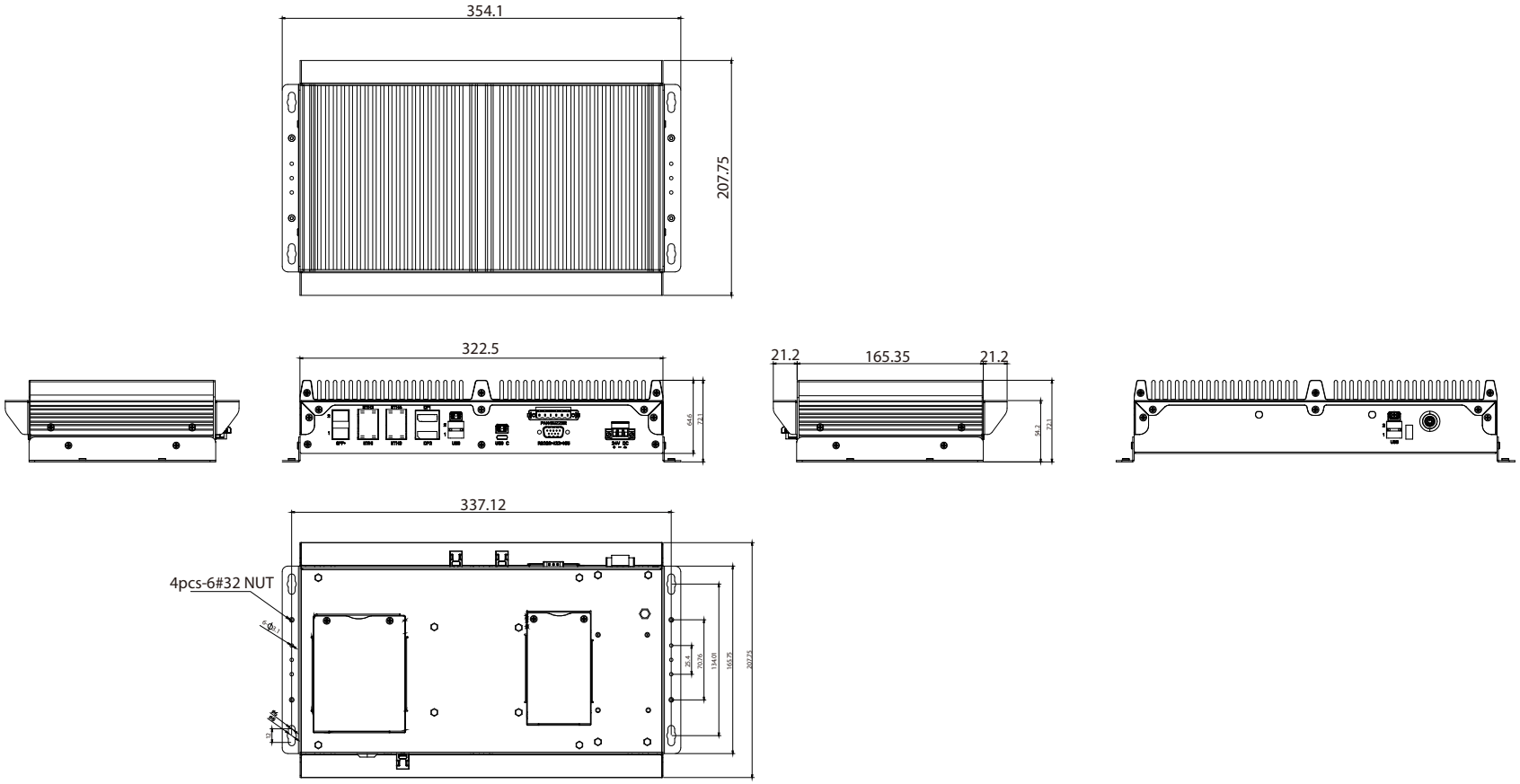
24V DC Input

Used to plug a DC power cord.

Mechanical Dimensions: CE-CL AC



Mechanical Dimensions: CE-CL DC



Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the motherboard. Note that information in this chapter applies to CE-CL.

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:

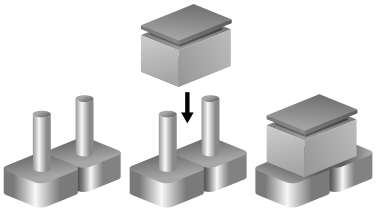
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

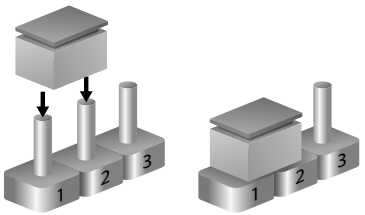
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

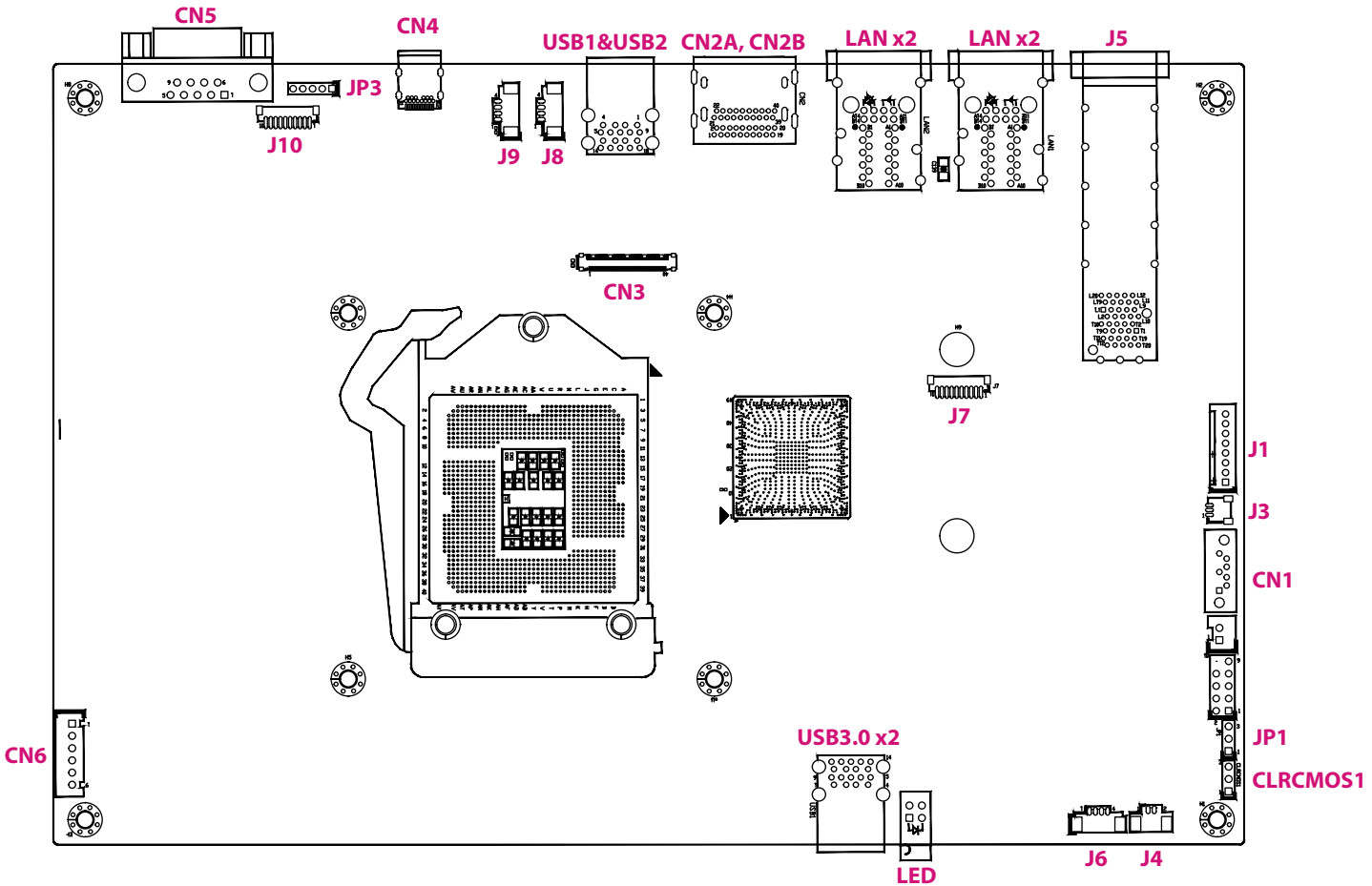


Three-Pin Jumpers: Pins 1 and 2 are Short

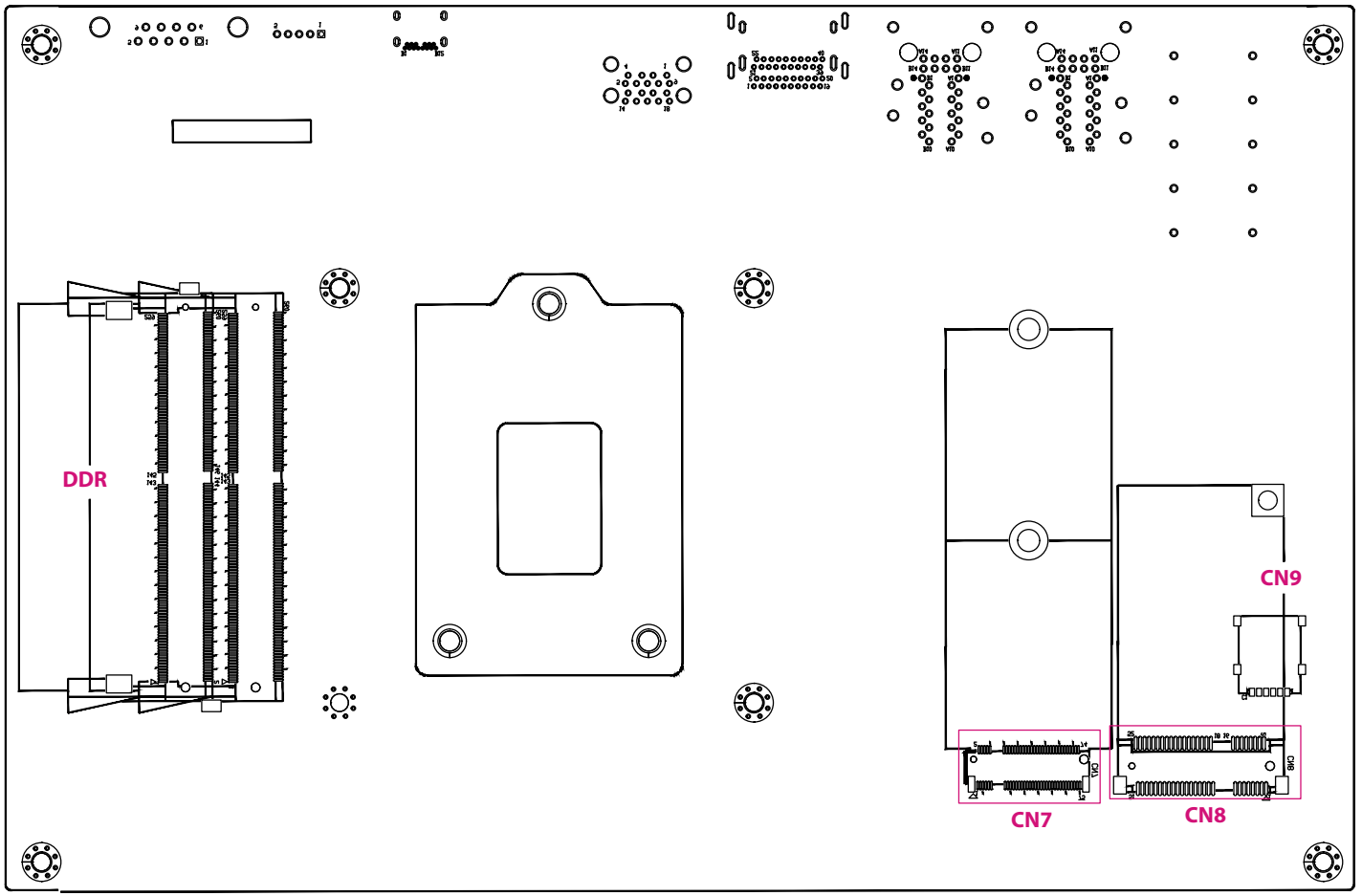


Locations of the Jumpers and Connectors

Top View



Bottom View



Jumpers

RTC Reset Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: CLRCMOS1

Pin	Settings
1-2 On	Normal
2-3 On	RTC Reset

1-2 On: default

AT/ATX Mode Pin Header

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP1

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

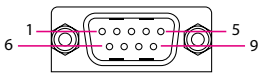
2-3 On: default

Connector Pin Definitions

External I/O Interfaces

COM1 Connector

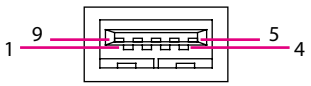
Connector type: DB-9 port, 9-pin
Connector location: CN5



Pin	Definition	Pin	Definition
1	COM1_ISO_DCDL	2	COM1_ISO_RXD
3	COM1_ISO_TXD	4	COM1_ISO_DTRL
5	ISO_GND	6	COM1_ISO_CTSL
7	COM1_ISO_RTSL	8	COM1_ISO_CTSL
9	COM1_ISO_RIL	MH1	GND
MH2	GND		

USB 3.0

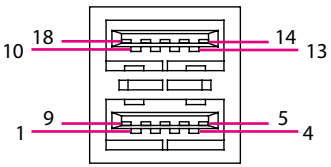
Connector type: USB 3.0 Port Type-C
Connector location: CN4



Pin	Definition	Pin	Definition
A1	GND	B1	GND
A2	USB3_TXP1/DP_TX3P	B2	USB3_TXP2/DP_TX0P
A3	USB3_TXN1/DP_TX3N	B3	USB3_TXN2/DP_TX0N
A4	VCC	B4	VCC
A5	USB3_CC1	B5	USB3_CC2
A6	USB3_DP1	B6	USB3_DP2
A7	USB3_DN1	B7	USB3_DN2
A8	USB3_SBU1/DP_AUXP	B8	USB3_SBU2/DP_AUXN
A9	VCC	B9	VCC
A10	USB3_RXN2/DP_TX1N	B10	USB3_RXN1/DP_TX2N
A11	USB3_RXP2/DP_TX1P	B11	USB3_RXP1/DP_TX2P
A12	GND	B12	GND
MH1	GND	MH2	GND
MH3	GND	MH4	GND
NH1		NH2	

USB 3.0 Connector 1

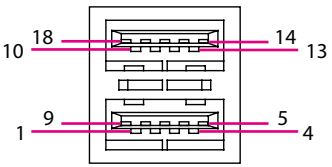
Connector type: USB 3.0 Port
Connector location: USB1



Pin	Definition	Pin	Definition
1	VCC	2	USB2_N3
3	USB2_P3	4	GND
5	USB3_RXN3	6	USB3_RXP3
7	GND	8	USB3_TXN3
9	USB3_TXP3	10	VCC
11	USB2_N4	12	USB2_P4
13	GND	14	USB3_RXN4
15	USB3_RXP4	16	GND
17	USB3_TXN4	18	USB3_TXP4
MH1	GND	MH2	GND
MH3	GND	MH4	GND

USB 3.0 Connector 2

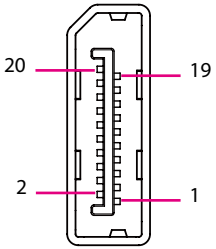
Connector type: USB 3.0 Port
Connector location: USB2

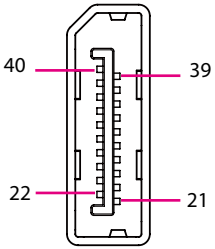


Pin	Definition	Pin	Definition
1	VCC	2	USB2_N5
3	USB2_P5	4	GND
5	USB3_RXN5	6	USB3_RXP5
7	GND	8	USB3_TXN5
9	USB3_TXP5	10	VCC
11	USB2_N6	12	USB2_P6
13	GND	14	USB3_RXN6
15	USB3_RXP6	16	GND
17	USB3_TXN6	18	USB3_TXP6
MH1	GND	MH2	GND
MH3	GND	MH4	GND

DisplayPort

Connector type: Display Port
Connector location: CN2A, CN2B



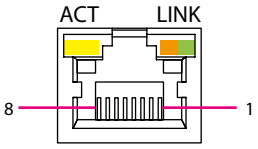


Pin	Definition	Pin	Definition
1	DP_TXP0	2	GND
3	DP1_TXN0	4	DP1_TXP1
5	GND	6	DP1_TXN1
7	DP1_TXP2	8	GND
9	DP1_TXN2	10	DP1_TXP3
11	GND	12	DP1_TXN3
13	DP1_CFG1	14	DP1_CFG2
15	DP1_AUXP	16	GND
17	DP1_AUXN	18	DP1_HPD
19	DP1_RETURN	20	+3V3_DP1
MH1	NC	MH2	GND
MH3	GND	MH4	GND

Pin	Definition	Pin	Definition
21	DP2_TXP0	22	GND
23	DP2_TXN0	24	DP2_TXP1
25	GND	26	DP2_TXN1
27	DP2_TXP2	28	GND
29	DP2_TXN2	30	DP2_TXP3
31	GND	32	DP2_TXN3
33	DP2_CFG1	34	DP2_CFG2
35	DP2_AUXP	36	GND
37	DP2_AUXN	38	DP2_HPD
39	DP2_RETURN	40	+3V3_DP1
MH5	NC	MH6	GND
MH7	GND	MH8	GND

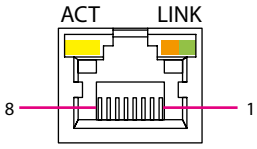
LAN Connector

Connector type: RJ45 Port
Connector location: LAN1, LAN2



Act	Status
Flashing Yellow	Data activity
Off	No activity

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



Act	Status
Flashing Yellow	Data activity
Off	No activity

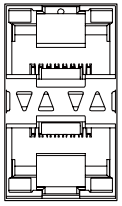
Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	10Mbps or no link

Pin	Definition	Pin	Definition
A1	LAN1_TXP0	B1	LAN2_TXP0
A2	LAN1_TXN0	B2	LAN2_TXN0
A3	LAN1_TXP1	B3	LAN2_TXP1
A4	LAN1_TXN1	B4	LAN2_TXN1
A5	LAN1_TXP2	B5	LAN2_TXP2
A6	LAN1_TXN2	B6	LAN2_TXN2
A7	LAN1_TXP3	B7	LAN2_TXP3
A8	LAN1_TXN3	B8	LAN2_TXN3
A9	+1V5_LAN1	B9	+1V5_LAN2

Pin	Definition	Pin	Definition
A10	GND	B10	GND
A11	+3VA_LAN1	B11	+3VA_LAN2
A12	LAN1_LINKACT	B12	LAN2_LINKACT
A13	LAN1_LED100M	B13	LAN2_LED100M
A14	LAN1_LED1G	B14	LAN2_LED1G
MH1	GND	MH4	GND
MH2	GND	MH5	GND
MH3	GND	MH6	GND
NH1	NC	NH2	NC

SFP Connector

Connector type: Dual SFP slots, 1Gb/s
Connector location: J5



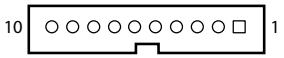
Pin	Definition	Pin	Definition
L1	GND	T1	GND
L2	LAN5_TXFAULT	T2	LAN6_TXFAULT
L3	LAN5_TXDis	T3	LAN6_TXDis
L4	LAN5_SFP_SDA	T4	LAN6_SFP_SDA
L5	LAN5_SFP_SCL	T5	LAN6_SFP_SCL
L6	LAN5_Present	T6	LAN6_Present
L7	+3V_LAN5	T7	+3V_LAN6
L8	LAN5_LOS	T8	LAN6_LOS
L9	GND	T9	GND
L10	GND	T10	GND
L11	GND	T11	GND
L12	LAN5_SFP_RDN	T12	LAN6_SFP_RDN
L13	LAN5_SFP_RDP	T13	LAN6_SFP_RDP
L14	GND	T14	GND

Pin	Definition	Pin	Definition
L15	VCCR1	T15	VCCR2
L16	VCCT1	T16	VCCT2
L17	GND	T17	GND
L18	LAN5_SFP_TDP	T18	LAN6_SFP_TDP
L19	LAN5_SFP_TDN	T19	LAN6_SFP_TDN
L20	GND	T20	GND
MH1	GND	MH7	GND
MH2	GND	MH8	GND
MH3	GND	MH9	GND
MH4	GND	MH10	GND
MH5	GND	MH11	GND
MH6	GND	MH12	GND
MH13	GND	NH1	NC
NH2	NC		

Internal Connectors

LPC 80 Port

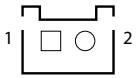
Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: J7



Pin	Definition	Pin	Definition
1	GND	2	PLTRSTL
3	CLK	4	LFRAME
5	LAD3	6	LAD2
7	LAD1	8	LAD0
9	SERIRQ	10	VCC
MH1		MH2	

Battery Connector

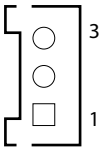
Connector type: 1x2 2-pin header, 1.25mm pitch
Connector location: J4



Pin	Definition
1	GND
2	VCC

EC Debug Connector

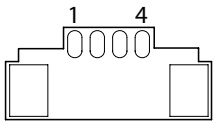
Connector type: 1x3 3-pin header, 1.0mm pitch
Connector location: J3



Pin	Definition	Pin	Definition
1	SMBCLK	2	SMBDATA
3	GND	MH1	GND

Power Button/Reset Connector

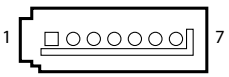
Connector type: 1x6 6-pin header, 1.25mm pitch
Connector location: J6



Pin	Definition	Pin	Definition
1	ATXBTL	2	GND
3	RESETL	4	GND
MH1	GND	MH2	GND

SATA Connector

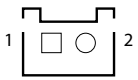
Connector type: 1.27mm, SATA-M-180
Connector location: CN1



Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP2
3	SATA_TXN2	4	GND
5	SATA_RXN2	6	SATA_RXP2
7	GND	MH1	GND
MH2	GND		

SATA Power Connector

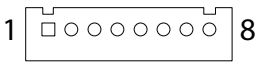
Connector type: 1x2 2-pin header, 2.5mm pitch
Connector location: J2



Pin	Definition
1	VCC
2	GND

Fan/Buzzer Connector

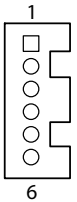
Connector type: 1x8 8-pin header, 2.0mm pitch
Connector location: J1



Pin	Definition	Pin	Definition
1	GND	2	FAN_12V_C
3	FAN_TAC2_C	4	FAN_CTL2_C
5	NC	6	BUZ_SYS_FB
7	+12V_BUZ	8	GND

Power Input Connector

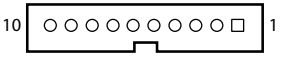
Connector type: 1x6 6-pin header, 2.5mm pitch
Connector location: CN6



Pin	Definition	Pin	Definition
1	VCC	2	VCC
3	VCC	4	GND
5	GND	6	GND

COM2 Connector

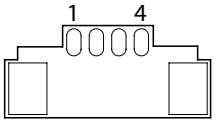
Connector type: 1x10 10-pin header, 1.0mm pitch
Connector location: J10



Pin	Definition	Pin	Definition
1	COM2_DCDL	2	COM2_RXD
3	COM2_TXD	4	COM2_DTRL
5	GND	6	COM2_DSRL
7	COM2_RTSL	8	COM2_CTSL
9	COM2_RIL	10	GND
MH1	GND	MH2	GND

Internal USB2.0 Connector

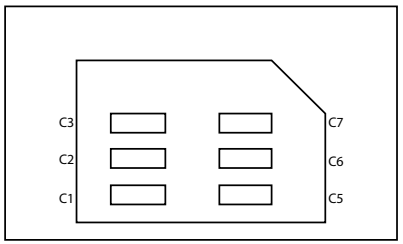
Connector type: 1x4 4-pin header, 1.25mm pitch
Connector location: J8, J9



Pin	Definition	Pin	Definition
1	VCC	2	USB2_N7
3	USB2_P7	4	GND
MH1	GND	MH2	GND

Nano SIM Card Holder

Connector location: CN9



Pin	Definition	Pin	Definition
C1	PWR	C2	RESET
C3	CLK	C5	GND
C6	VPP	C7	DATA
MH1	NC	MH2	NC
MH3	NC	MH4	NC

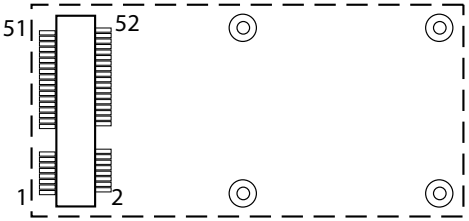
Programming Test Pin Header

Connector type: 1x5 5-pin header, 2.0mm pitch
Connector location: JP3

Pin	Definition	Pin	Definition
1	VDDD_CCG5	2	GND
3	CCG5_XRES	4	CCG5_I2C_CFG
5	CCG5_SWD_IO		

Mini PCIe Slot

Connector location: CN8

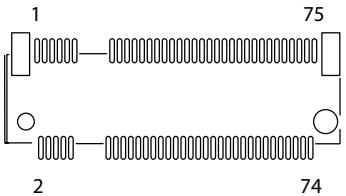


Pin	Definition	Pin	Definition
1	WAKEL	2	3VA
3	NC	4	GND
5	NC	6	+1V5
7	CLKREQL	8	SIM_PWR
9	GND	10	SIM_DATA
11	MINI_CLKN	12	SIM_CLK
13	MINI_CLKP	14	SIM_RESET
15	GND	16	SIM_VPP
17	NC	18	GND
19	NC	20	MINI_DISABLEL
21	GND	22	PLTRSTL
23	PCIE_RXN/SATA_RXP	24	3VA
25	PCIE_RXP/SATA_RXN	26	GND
27	GND	28	+1VS5
29	GND	30	SMB_CLK

Pin	Definition	Pin	Definition
31	PCIE_TXN/SATA_TXN	32	SMB_DATA
33	PCIE_TXP/SATA_TXP	34	GND
35	GND	36	USB2N
37	GND	38	USB2P
39	3VA	40	GND
41	3VA	42	NC
43	GND	44	NC
45	CL_CLK	46	NC
47	CL_DATA	48	+1V5
49	CL_RSTL	50	GND
51	PCIE_SATA_SEL	52	3VA
MH1	GND	MH2	GND
MH3	GND	MH4	GND
MH5	GND	MH6	GND
NH1	NC	NH2	NC

M.2 Slot

Connector location: CN7



Pin	Definition	Pin	Definition
1	CONFIG3	2	+3V3
3	GND	4	+3V3
5	GND	6	PWROFFL
7	NC	8	WDISABLEL
9	NC	10	NC
20	NC	21	CONFIG0
22	NC	23	NC
24	NC	25	NC
26	WANGPSON	27	GND
28	NC	29	PCIE_RXN18
30	NC	31	PCIE_RXP18
32	NC	33	GND
34	NC	35	PCIE_TXN18
36	NC	37	PCIE_TXP18
38	DEVSLP	39	GND

Pin	Definition	Pin	Definition
40	NC	41	PCIE_RXN17/SATA_RXP4
42	NC	43	PCIE_RXP17/SATA_RXN4
44	NC	45	GND
46	NC	47	PCIE_TXN17/SATA_TXN4
48	NC	49	PCIE_TXP17/SATA_TXP4
50	PLTRSTL	51	GND
52	CLKREQL	53	PCIE_CLKN
54	WAKEL	55	PCIE_CLKP
56	SMB_CLK	57	GND
58	SMB_DATA	59	NC
60	NC	61	NC
62	NC	63	NC
64	NC	65	NC
66	NC	67	PLTRSTL
68	SUSCLK	69	CONFIG1
70	+3V3	71	GND
72	+3V3	73	GND
74	+3V3	75	CONFIG2
MH1	GND	MH2	GND
NH1	NC	NH2	NC

eDP Connector

Connector type: 1x40 40-pin header, 0.4mm pitch
Connector location: CN3

Pin	Definition	Pin	Definition
1	PLTRSTL	2	GND
3	EDP_TX3N	4	EDP_TX3P
5	GND	6	EDP_TX2N
7	EDP_TX2P	8	GND
9	EDP_TX1N	10	EDP_TX1P
11	GND	12	EDP_TX0N
13	EDP_TX0P	14	GND
15	EDP_AUXP	16	EDP_AUXN
17	GND	18	EDP_VDD
19	EDP_VDD	20	EDP_VDD
21	EDP_VDD	22	NC
23	GND	24	GND
25	GND	26	GND
27	EDP_HPD	28	GND
29	GND	30	GND
31	GND	32	EDP_BKLTEN

Pin	Definition	Pin	Definition
33	EDP_BKLCTL	34	SMB_CLK
35	SMB_DATA	36	+12V
37	+12V	38	+12V
39	+12V	40	+12V
MH1	GND	MH2	GND
MH3	GND	MH4	GND
G1	GND	G2	GND
G3	GND	G4	GND
G5	GND		

Chapter 3: BIOS Setup

This chapter describes how to use the BIOS setup program for CE-CL. 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 NexAIoT website at http://www.nexaiot.com.

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 

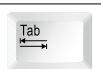
key to enter Setup:

Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menu or fields.

Exits the BIOS Setup Utility.

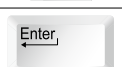
Scrolls forward through the values or options of the highlighted field.

Scrolls backward through the values or options of the highlighted field.

Selects a field.

Displays General Help.

Load previous values.

Load optimized default values.

Saves and exits the Setup program.

Press <Enter> to enter the highlighted sub-menu

Scroll Bar

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

Submenu

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

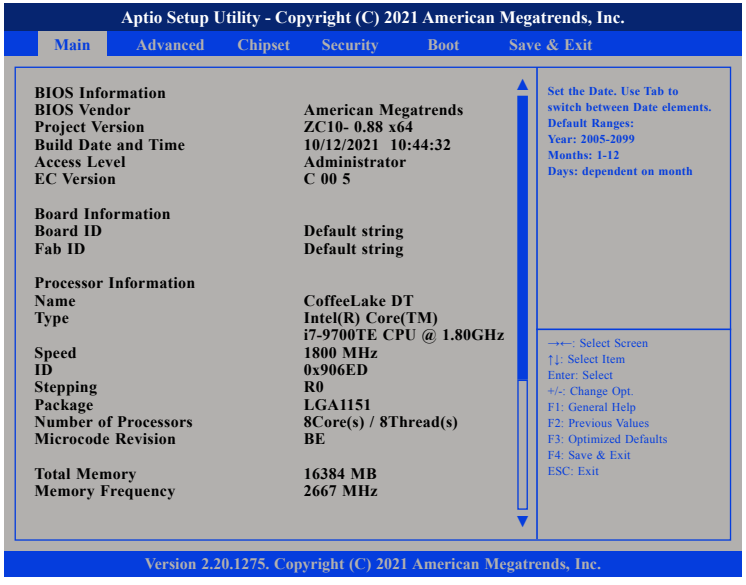
.

BIOS Setup Utility

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

Main

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



System Date

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

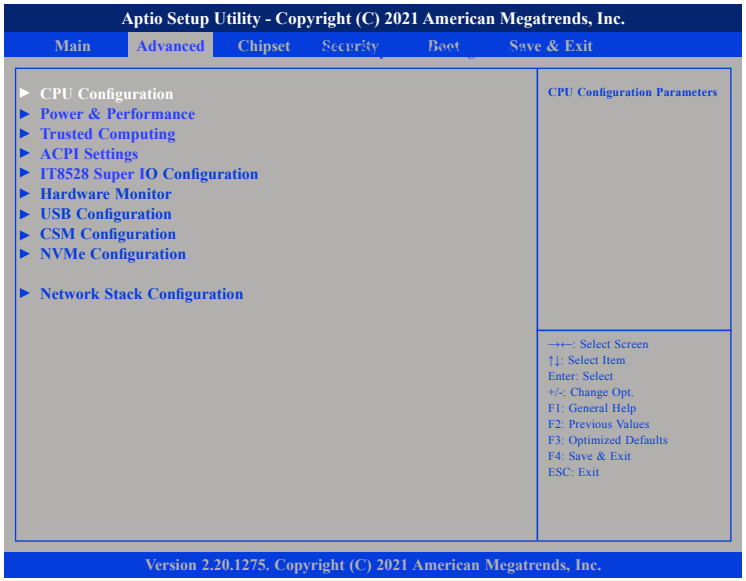
System Time

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

Advanced

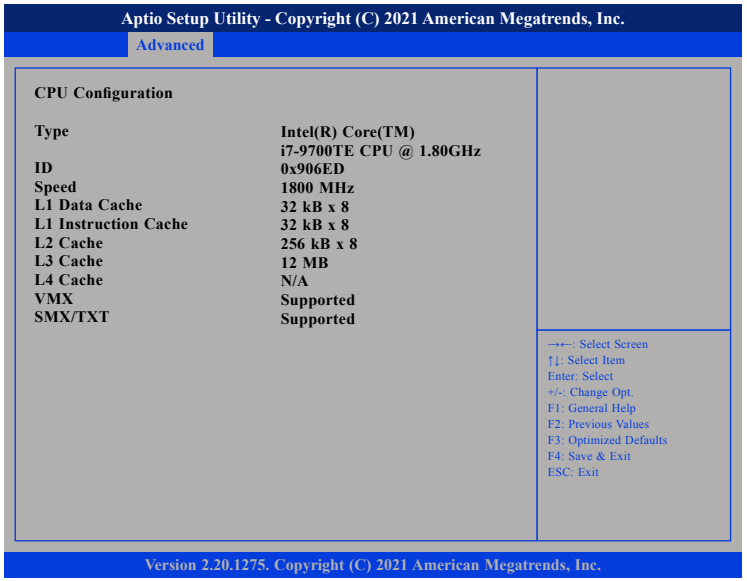
The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.



CPU Configuration

This section is used to configure the CPU.



Power & Performance

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

CPU - Power Management Control

Enters the CPU - Power Management Control sub-menu.

CPU - Power Management Control

Intel® SpeedStep™

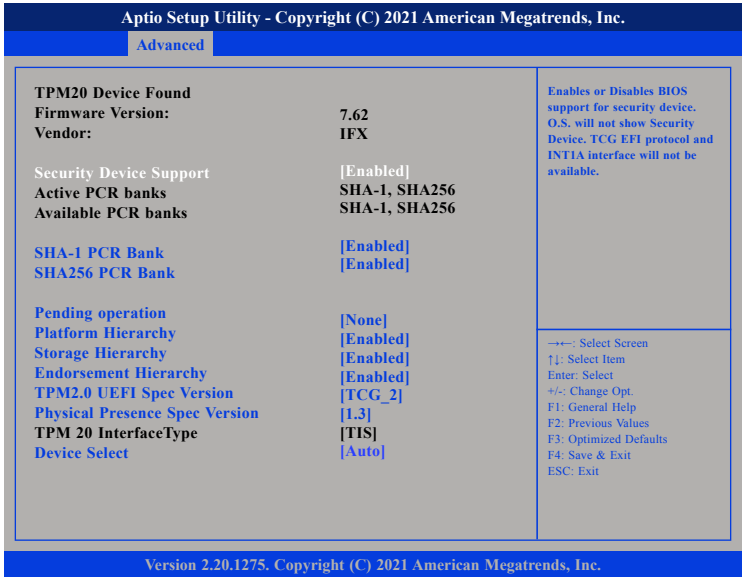
Enables or disables Intel SpeedStep technology.

Intel® Speed Shift Technology

Enables or disables Intel Speed Shift Technology support. Enabling it will expose the CPPC v2 interface to allow hardware controlled P-states.

Trusted Computing

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



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

SHA-1 PCR Bank
Enables or disables SHA-1 PCR Bank.

SHA256 PCR Bank
Enables or disables SHA256 PCR Bank.

Pending operation
Schedules an operation for the security device.

Platform Hierarchy
Enables or disables Platform Hierarchy.

Storage Hierarchy
Enables or disables Storage Hierarchy.

Endorsement Hierarchy
Enables or disables Endorsement Hierarchy.

TPM2.0 UEFI Spec Version
Configures the TPM2.0 UEFI spec version.

TCG_1_2: The compatible mode Windows 8/Windows 10.
TCG_2: Support new TCG2 protocol and event format for Windows 10 or later.

Physical Presence Spec Version
Configures 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.

ACPI Setting

This section is used to configure ACPI settings.

Enable Hibernation

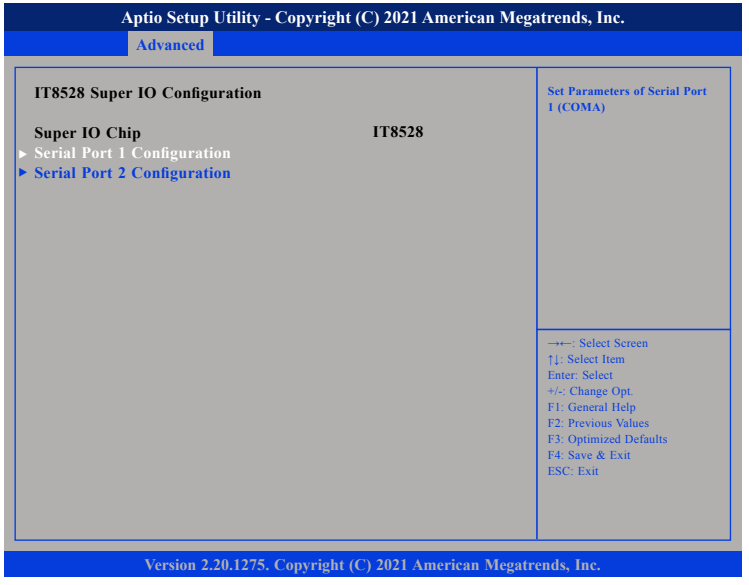
Enables or disables system ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.

ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed.

IT8528 Super IO Configuration

This section is used to configure the serial port of the super IO.



Serial Port 1 Configuration

Enters the sub-menu of serial port 1 configuration.

Serial Port 2 Configuration

Enters the sub-menu of serial port 2 configuration.

IT8528 Super IO Configuration

This section is used to configure the serial port of the super IO.

Serial Port 0 Configuration

Enters the sub-menu of serial port 0 configuration.

Serial Port 1 Configuration

This section is used to configure serial port 1.

Serial Port

Enables or disables the serial port.

Change Settings

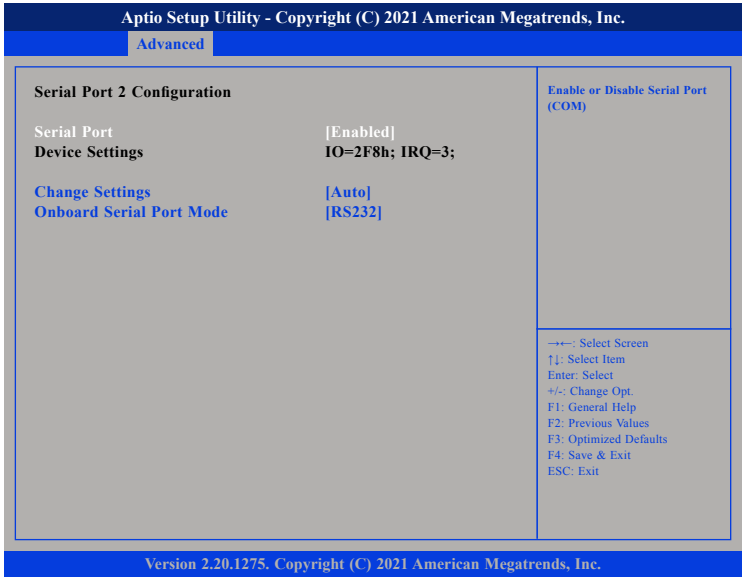
Selects an optimal setting for the Super IO device.

Onboard Serial Port Mode

Configures the serial port mode to RS232, RS422 or RS485.

Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

Enables or disables the serial port.

Change Settings

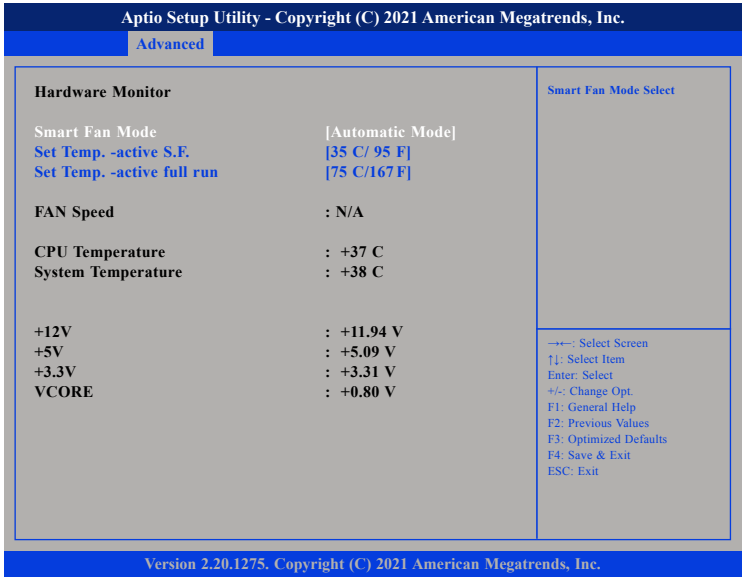
Selects an optimal setting for the Super IO device.

Onboard Serial Port Mode

Configures the serial port mode to RS232, RS422 or RS485.

Hardware Monitor

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



Smart Fan Mode

Selects the mode of the fan, the options are Full on Mode and Automatic Mode.

Set Temp.-active S.F.

Configures the temperature threshold to activate smart fan.

Set Temp.-active Full Run

Configures the temperature threshold to activate the fan in full speed.

Fan Speed
Detects and displays fan speed.

CPU Temperature
Detects and displays the current CPU temperature.

System Temperature
Detects and displays the current system temperature.

+12V
Detects and displays 12V voltage.

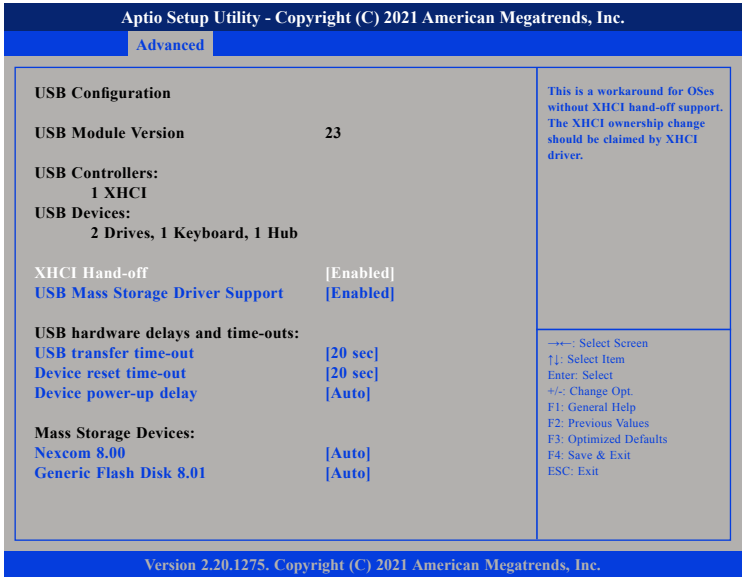
+5V
Detects and displays 5V voltage.

+3.3V
Detects and displays 3.3V voltage.

Vcore
Detects and displays the Vcore CPU voltage.

USB Configuration

This section is used to configure the USB.



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

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

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

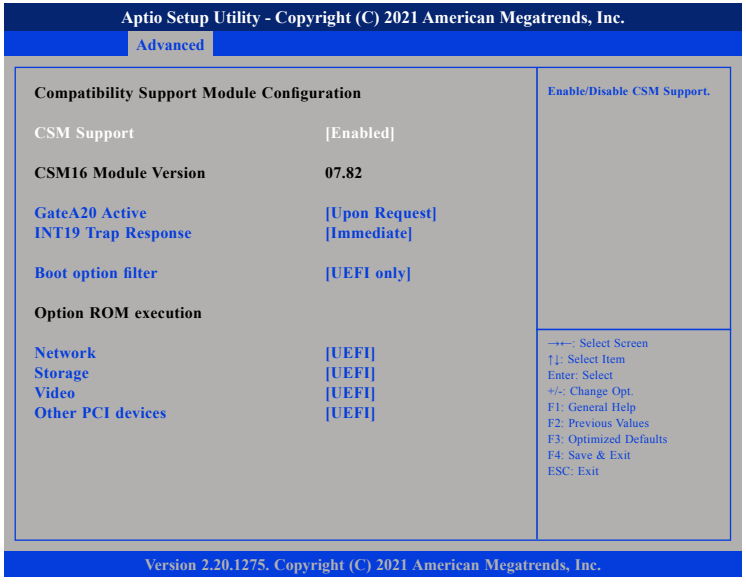
Device reset time-out
Selects the USB mass storage device's start unit command timeout.

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

Mass Storage Devices:
Selects the mass storage device emulation type.

CSM Configuration

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



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

GateA20 Active

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

Option ROM Messages
Configures the display mode for Option ROM.

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

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

Boot Option Filter
Configures which devices the system will boot from.

Network
Controls the execution of UEFI and Legacy PXE OpROM.

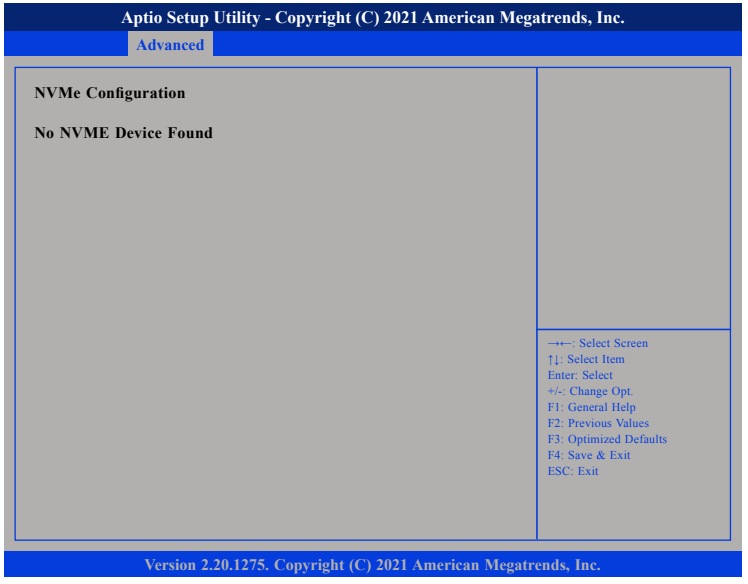
Storage
Controls the execution of UEFI and Legacy Storage OpROM.

Video
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI Devices
Configures the OpROM execution policy for devices other than Network, Storage or Video.

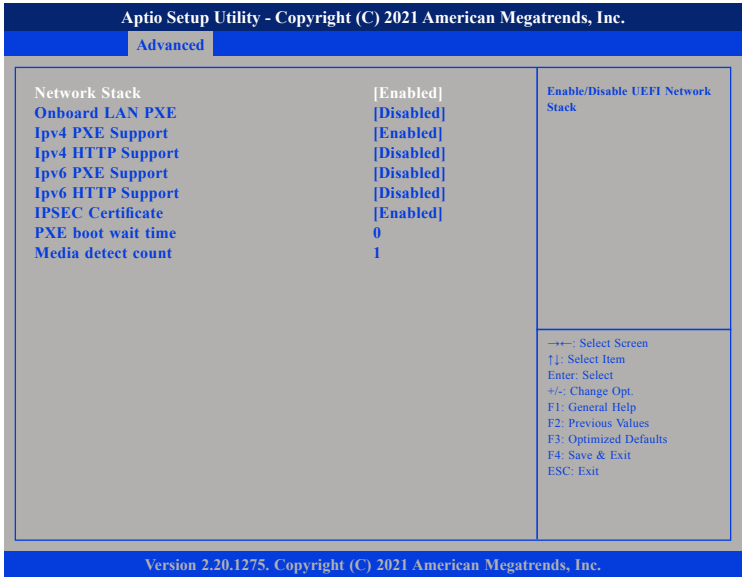
NVMe Configuration

This section is used to display information on the NVMe devices installed.



Network Stack Configuration

This section is used to configure the network stack.



Network Stack
Enables or disables UEFI network stack.

Onboard LAN PXE
Enables or disables onboard LAN PXE ROM.

Ipv4 PXE Support
Enables or disables IPv4 PXE support. If disabled, the IPv4 boot option will not be created.

Ipv6 PXE Support
Enables or disables IPv6 PXE support. If disabled, the IPv6 boot option will not be created.

Ipv6 HTTP Support
Enables or disables IPv6 HTTP support.

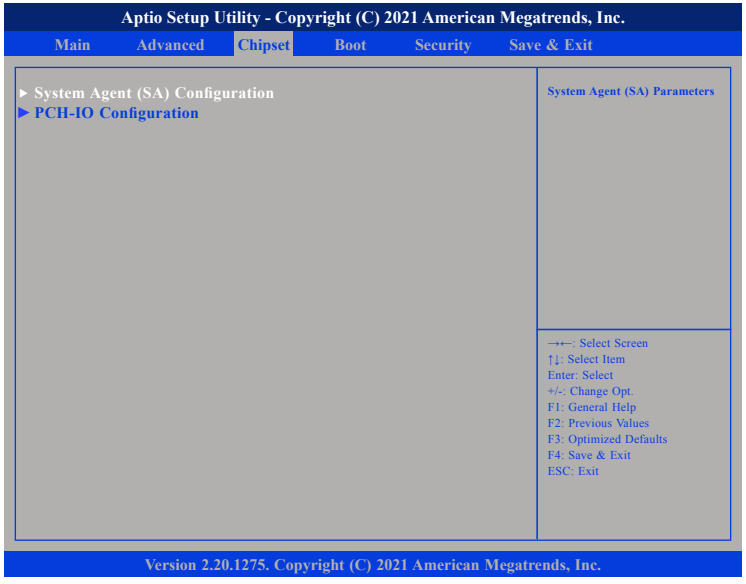
IPSEC Certificate
Enables or disables IPSEC certificate.

PXE boot wait time
Configures the wait time to press the ESC key to abort the PXE boot.

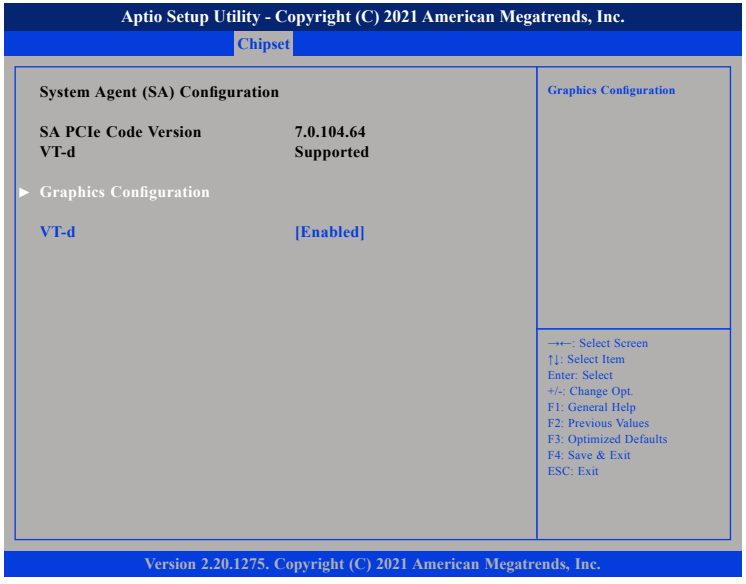
Media detect count
Configures the number of times the media will be checked.

Chipset

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



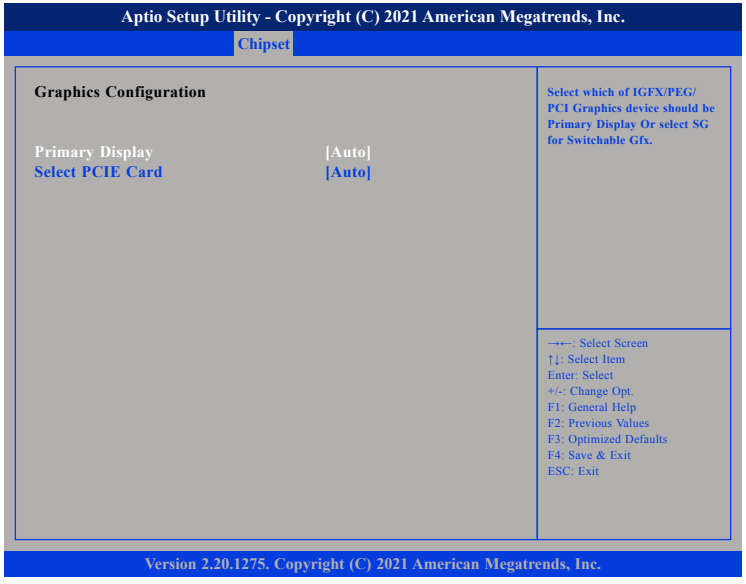
System Agent (SA) Configuration



VT-d

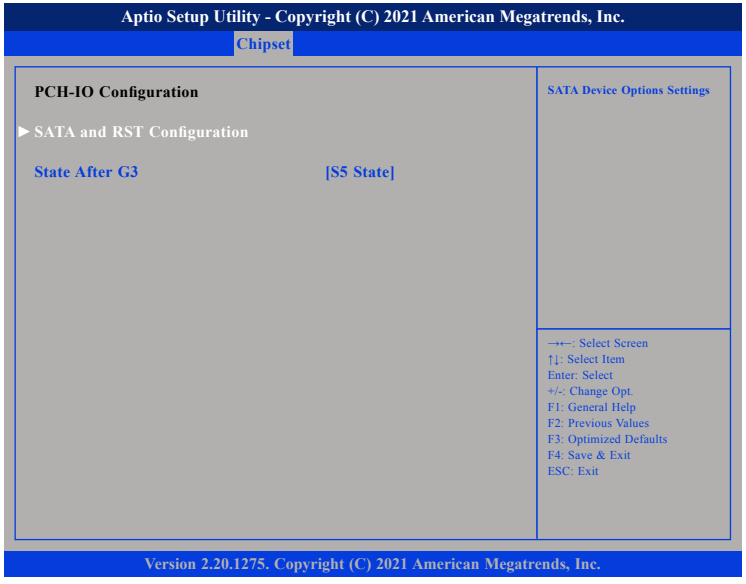
Enables or disables VT-d function on MCH.

Graphics Configuration



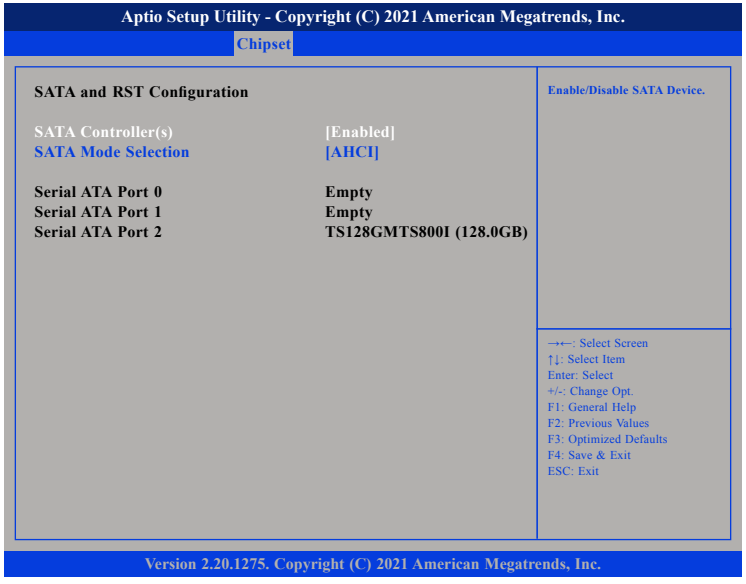
Primary Display
Select which graphics device should be primary display or select SG for switchable GFx.

PCH-IO Configuration



State After G3
Configures the state the system will enter when power is reapplied after a power failure (G3 state).

SATA and RST Configuration



SATA Controller(s)
Enables or disables the SATA controller.

SATA Mode Selection
Configures the SATA as AHCI mode.

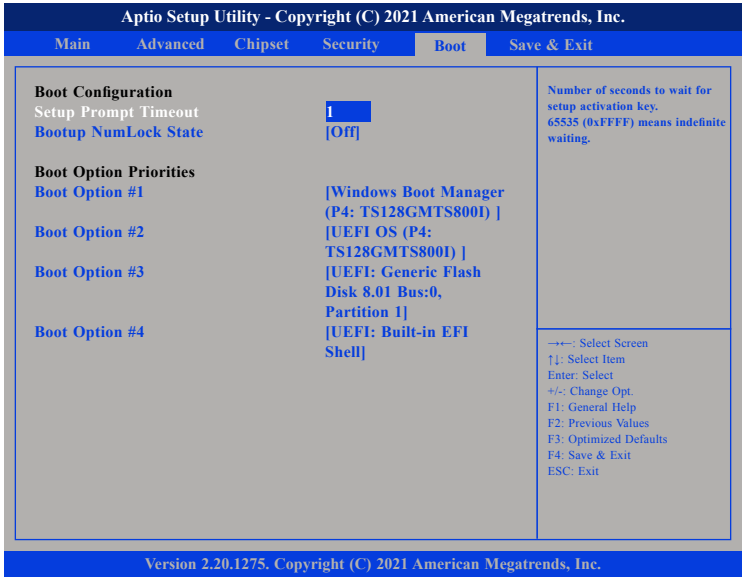
AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance

Security

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

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

Boot



Setup Prompt Timeout

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

Bootup NumLock State

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

Boot Option Priorities

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

Save & Exit

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 reset 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.