

RKP-C110 Series Hardware User Manual

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RKP-C110 Series Hardware User Manual

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1. Introduction

Thank you for purchasing the Moxa RKP-C110 industrial computer. This manual covers hardware installation, connector interfaces, and BIOS setup of the RKP-C110. For software configuration and management, please refer to the user manual for the operating system on your computer.

Overview

The RKP-C110 Series rackmount computers are powered by a 11th Gen Intel® Celeron® or Intel® Core™ i5, or i7 processor. The computers come with a rich set of interface options including up to 10 software-selectable RS-232/422/485 serial ports, up to 12 Gigabit Ethernet ports, and 8 digital inputs and 8 digital outputs. The communication interfaces are located on the front and rear sides of the product, enabling easy access and expansion for industrial applications. Two hand-rotated 2.5" SSD storages and an outer replaceable RTC battery design deliver a reliable, durable, and versatile platform for a more user-friendly option.

Designed as 1U standard form factor fanless rackmount computers with an operating temperature range of -30 to 60°C and a build-in TPM 2.0 module, the RKP-C110 computers are ideal as reliable and secure computing platforms for industrial applications in extreme operating environments.

Package Checklist

Each basic system model is shipped with the following standard items.

- RKP-C110 Series rackmount computer (mounting ears attached)
- 2-pin terminal block for DC power
- 2 10-pin terminal blocks for DI/DO
- Pack of 8 screws for the storage trays
- Quick Installation Guide
- Warranty card



NOTE

Please notify your sales representative if any of the above items are missing or damaged.

Product Features

The RKP-C110 computer has the following features:

- 1U Rackmount computer with fanless design
- 11th Gen Intel® Celeron® or Intel® Core™ i5, or i7 processors
- Rich interface options of up to 10 Serial ports or up to 12 LAN ports
- -30 to 60°C wide-temperature design
- Standard form factor to fit in industrial application
- Interface front-side display design

Hardware Specifications



NOTE

The latest specifications for Moxa's products can be found at <https://moxa.com>.

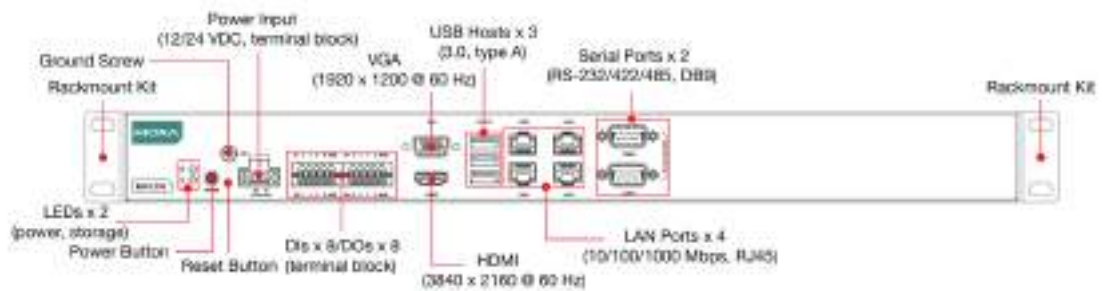
2. Hardware Introduction

In this chapter, we provide information about the RKP-C110 computer's hardware components.

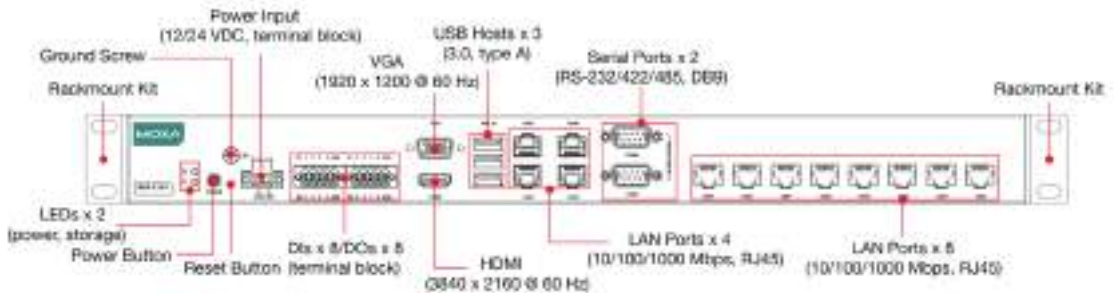
Appearance

Front View

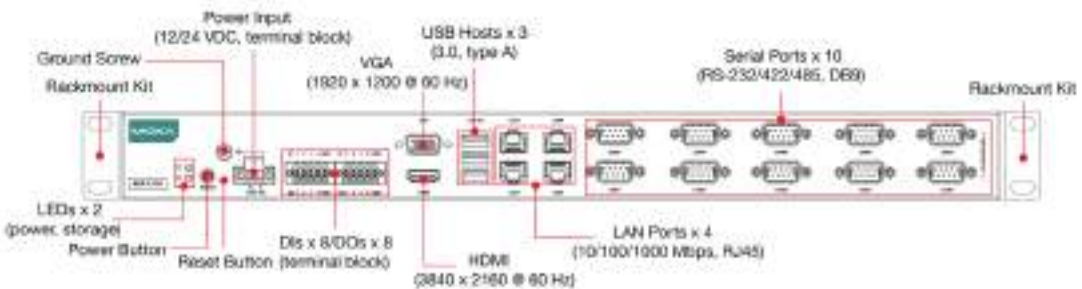
RKP-C110-C1-T/RKP-C110-C5-T/RKP-C110-C7-T Models



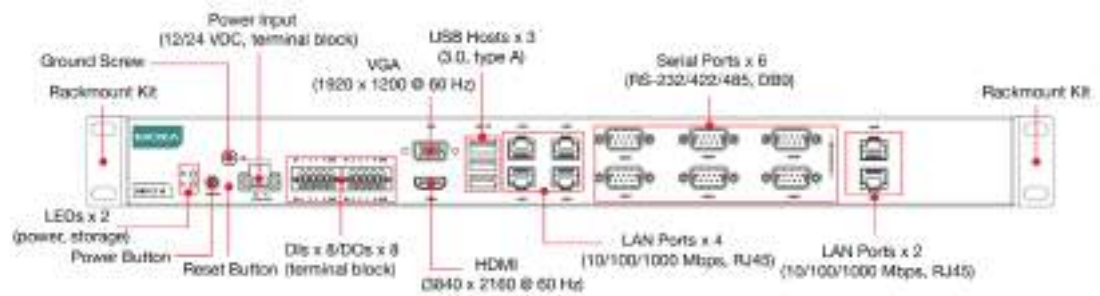
RKP-C110-C1-8L-T/RKP-C110-C5-8L-T/RKP-C110-C7-8L-T Models



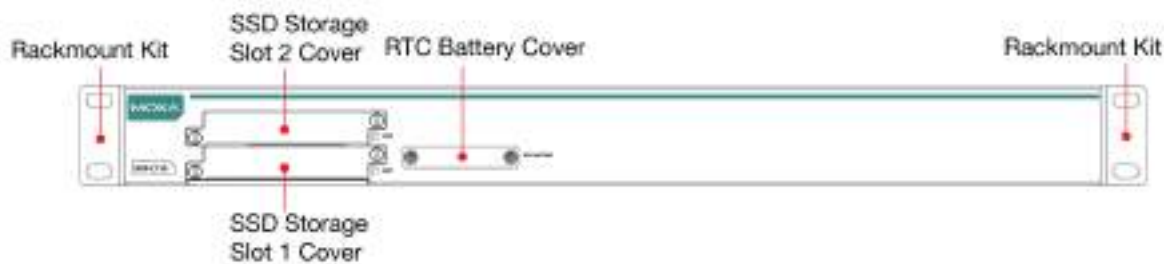
RKP-C110-C1-8C-T/RKP-C110-C5-8C-T/RKP-C110-C7-8C-T Models



RKP-C110-C1-2L4C-T/RKP-C110-C5-2L4C-T/RKP-C110-C7-2L4C-T Models

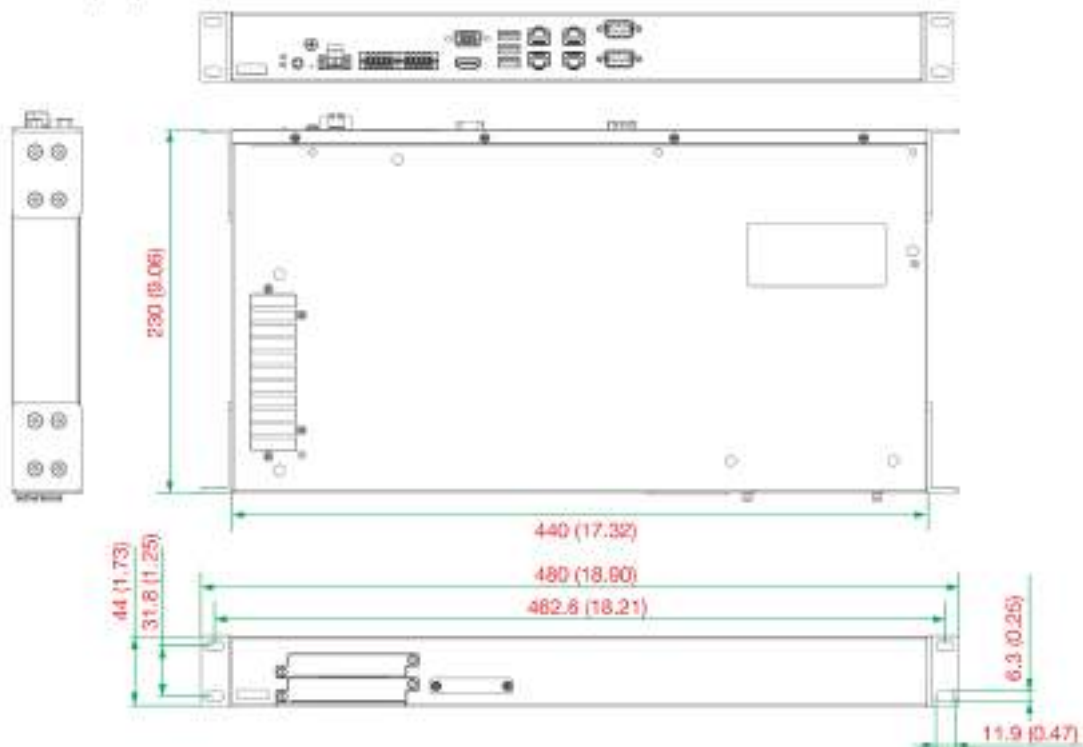


Rear View



Dimensions

Unit: mm (inch)



LED Indicators

The following table describes the function of the LED indicators located on the front panel of the computer.

LED	Color	Description
Power	Green	Power is ON
	OFF	No power input or any other power error
Ethernet (10/100 Mbps) (1000 Mbps)	Green	Steady ON: 10/100 Mbps Ethernet link Blinking: Data is being transmitted or received
	Yellow	Steady ON: 1000 Mbps Ethernet link Blinking: Data is being transmitted or received
	OFF	No Ethernet connection
Storage (2.5" SSD)	Yellow	Blinking: Data is being accessed from the SSD drive
	OFF	Data is not being accessed from the SSD drive

Reset Button

Pressing the **Reset** button, located on the front panel, initiates a hardware warm reboot. The button plays the same role as a desktop PC's reset button. After pressing the reset button, the system will reboot automatically. DO NOT use the Reset button under normal conditions; use it only if the software is not working properly. To protect the integrity of data being transmitted or processed, you should always reset the system via the operating system using the software reboot function.

Real Time Clock (RTC)

The RKP-C110's real-time clock is powered by a lithium battery. You can easily replace the battery yourself using an optional battery kit. Refer Replacing the RTC Battery section for details. However, please note that there is a risk of explosion if the battery is replaced by an incorrect type of battery. Contact a qualified Moxa support engineer if you have any questions about the RTC battery.



ATTENTION

There is a risk of explosion if the battery is replaced by a battery of the incorrect type.

3. Hardware Connections

The RKP-C110 computers are compact and rugged, making them suitable for industrial applications. The LED indicators allow users to monitor performance and quickly identify trouble spots. Multiple ports are provided for connecting a variety of different devices. The computers come with a reliable and stable hardware platform that lets you devote the bulk of your time to application development. This chapter describes the hardware installation and connector interfaces of the RKP-C110 computer.

Installing Rack-mounting Ears

The RKP-C110 computer comes preinstalled with two rack-mounting ears. If they are not, use the rack-mounting kit to install the ears. The rack-mounting kit includes 2 rack-mounting ears and 8 screws (size: M4x6), four for each mounting ear..



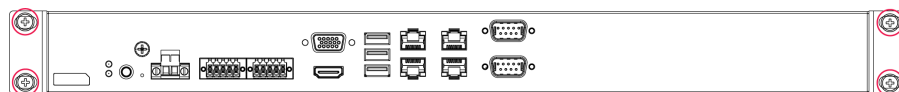
To install the computer on a rack, do the following:

Step 1:

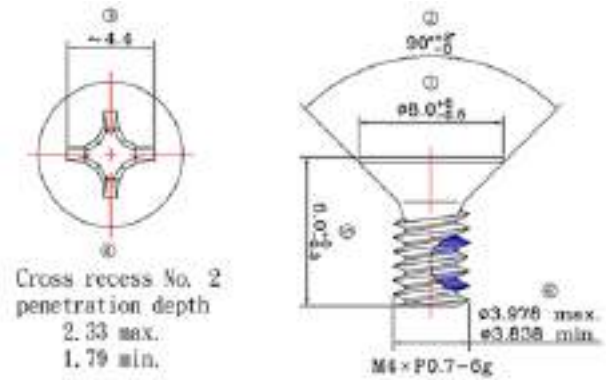
If the mounting ears are not installed, use four screws to attach the mounting ears on both sides of the computer.

Step 2:

Place the computer on a rack and use another four screws to secure the rack-mount ears to the rack.



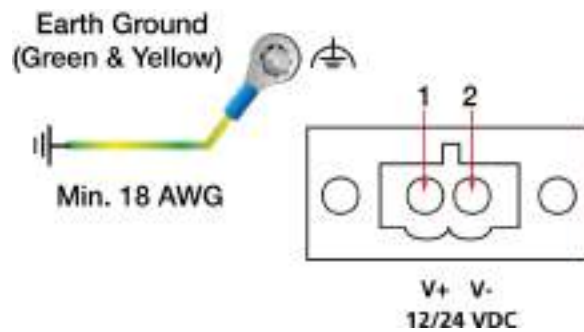
The second set of four screws needs to be purchased separately. Refer to the figure on the right for the specifications.



Connecting the Power

The RKP-C110 computers are provided with 2-pin power input connectors in a terminal block on the front panel. Insert the power-cord wires into the connectors and tighten them to secure the wires in place. Plug in the power cable to a power source. The power LED will light up to indicate that power is being supplied to the computer. It should take about 30 to 60 seconds for the operating system to complete the boot-up process.

Pin	Definition
1	V+
2	V-



The power input specification is given below:

The DC power source rating is 12 VDC @ 7.34 A, or 24 VDC @ 3.4 A. An 18 AWG cable size DC power is suggested.

For surge protection, connect the grounding connector located at the upper left of the power connector with the earth (ground) or a metal surface.



ATTENTION

This product is intended to be supplied by a Listed Power Supply with output marked LPS and rated to deliver 12 VDC at a maximum of 7.34 A, or 24 VDC at a maximum of 3.4 A, and minimum Tma=60°C. If you need assistance with purchasing a power adapter, contact the Moxa technical support team.



ATTENTION

Before connecting the RKP-C110 computer to the DC power inputs, ensure that the DC power source voltage is stable.

- The wiring for the input terminal block shall be installed by qualified and experienced professionals.
 - Wire Type: Cu · FW2
 - Use 18-12 AWG wire size and a torque value of 0.5 N-m.
- Use only one conductor in a clamping point between the DC power source and the power input.



NOTE

If using Class I adapter, the power cord adapter should be connected to a socket outlet with an earthing connection or the power cord and adapter must comply with Class II construction.



NOTE

For surge protection, connect the grounding connector located below the power connector with the earth (ground) or a metal surface.

An 18 AWG cable size conductor must be used when the connection to the external grounding screw is utilized. The heat sink is grounded to the chassis by an internal screw.



警告

為避免電磁干擾，本產品不應安裝或使用於住宅環境。

Wiring Requirements

The following common safety precautions should be observed before installing any electronic device:

- Power wires and communication/signal wires should be routed through separate paths. If power and communication/signal wires must cross paths, make sure the wires are perpendicular at the intersection point.
- Use the type of signal transmitted through a wire to determine which wires should be bundled together and which ones should be kept separate. The rule of thumb is that wiring that carries similar electrical signals can be bundled together.
- When necessary, we strongly advise labeling the wiring for all devices in the system.



ATTENTION

Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.



ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your device.

Electrical Current Caution!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum rating, the wiring could overheat, causing serious damage to your equipment.

Temperature Caution!

Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may feel hot to the touch.



Restricted Access Location

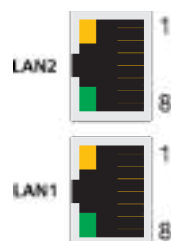
This equipment is intended to be used in Restricted Access Locations, such as a computer room, with access limited to SERVICE PERSONAL or USERS who have been instructed on how to handle the metal chassis of equipment that is so hot that special protection may be needed before touching it. The location should only be accessible with a key or through a security identity system.

Ethernet Ports

The RKP-C110 has 6 Gigabit LAN ports. When a LAN cable is properly connected, the LEDs on the front panel will glow to indicate the connection status.

The pin assignments are shown below:

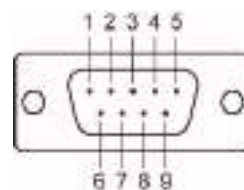
Pin	10/100 Mbps	1000 Mbps
1	ETx+	TRD(0)+
2	ETx-	TRD(0)-
3	ERx+	TRD(1)+
4	-	TRD(2)+
5	-	TRD(2)-
6	ERx-	TRD(1)-
7	-	TRD(3)+
8	-	TRD(3)-



Serial Ports

The RKP-C110 comes with 2, 6, or 10 software-selectable RS-232/422/485 serial ports with DB9 connectors, which are located on the front panel. The pin assignments are shown below:

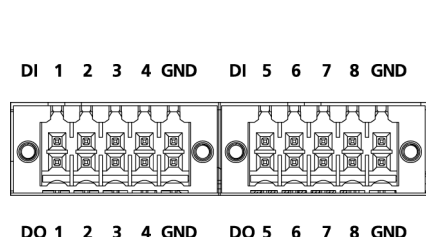
Pin	RS-232	RS-422	RS-485 (2-wire)
1	DCD	TxDA(-)	-
2	RxD	TxDB(+)	-
3	TxD	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	DataA(-)
5	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-



Digital Inputs/Digital Outputs

The RKP-C110 is provided with four digital inputs and four digital outputs in a terminal block. They are located on the front panel of the computer.

For pin definitions, see the figure below:



Digital Inputs

Dry Contact:

Logic 0: Short to Ground

Logic 1: Open

Digital Outputs

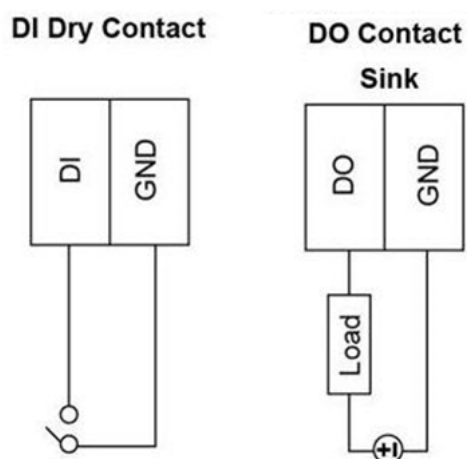
Current Rating:

200 mA per channel

Voltage:

0 to 24 VDC

For wiring methods, see the figure below:

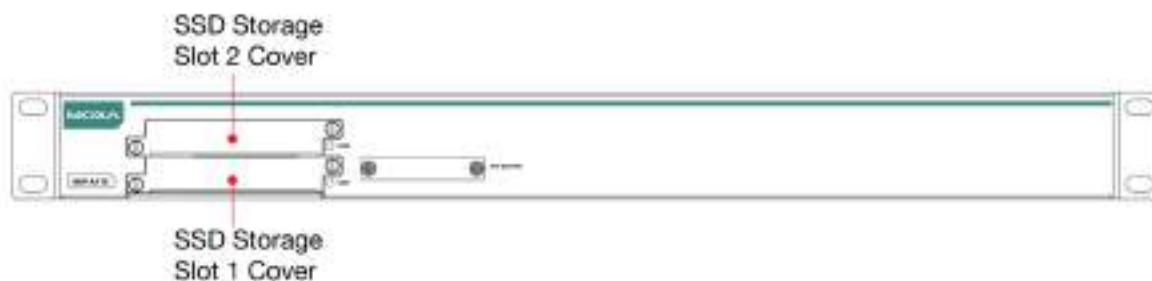


Connecting USB Devices

The RKP-C110 has 3 USB 3.0 Type-A connectors located on the front panel. The ports support keyboard and mouse devices and can also be used to connect a flash disk for storing large amounts of data.

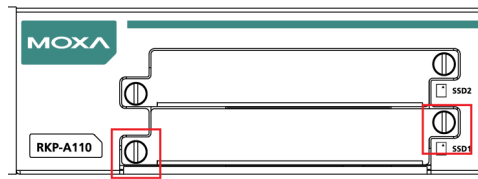
Installing Storage Disks

The RKP-C110 comes with two storage slots that allow users to install two 2.5" SATA HDD/SSD. The slots are located on the rear panel of the computer. Follow these steps to install a storage disk.



To install an SSD drive, do the following:

1. Unfasten the screw on the storage slot cover.



2. Pull out the storage tray and find the four screws included in the product package.



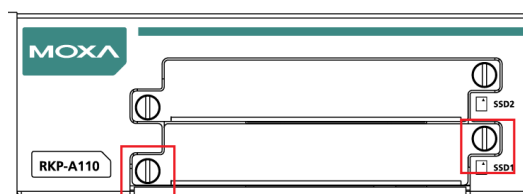
3. Place the storage disk on the tray.
Ensure that the storage disk aligns with the screws on the storage tray.



4. Reverse the storage tray and fasten four screws to secure the storage drive to the tray.



5. Insert the storage tray into the slot and secure the tray in place with two screws.



6. Use the same method to install a storage disk in the other slot.

Connecting to Displays

The RKP-C110 has an HDMI connector and a VGA connector located on the front panel, allowing users to connect to an audio or video device.



NOTE

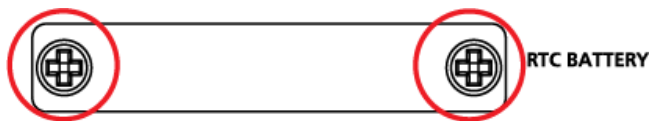
Use HDMI-certified cables for a reliable audio or video connection.

Replacing the RTC Battery

The RKP-C110 comes with one slot for a battery on the bottom panel of the computer. A lithium battery (3 V / 200 mA) is preinstalled in the slot.

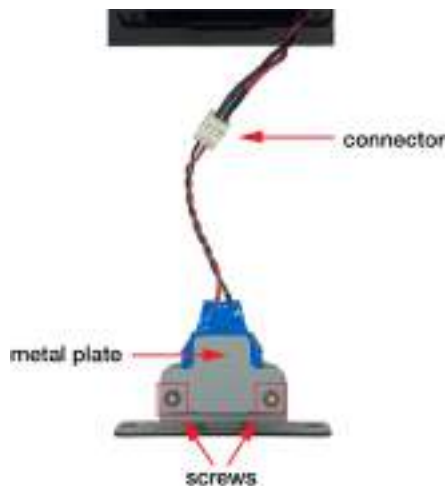
To replace the battery, do the following:

1. Unfasten the two screws on the battery cover.



2. Take off the cover.

The battery is attached to the slot cover as indicated in the image.



3. Unplug the connector of the battery-cover assembly from the internal wire of the slot.
4. Remove the two screws on the metal plate attached to the battery holder.



5. Place a new battery in the battery holder, replace the metal plate, and fasten the two screws on to the frame to secure the battery.



6. Plug in the connector of the battery-cover assembly to the internal wire of the slot.
7. Place the battery holder back in the slot and secure it by fastening the two screws on the cover.



WARNING

Be sure to use the correct type of battery. Incorrect battery may cause system damage. Contact Moxa's technical support staff for assistance, if necessary.

To reduce the risk of fire or burns, do not disassemble, crush, or puncture the battery; do not dispose of in fire or water and do not short external contacts.

4. BIOS Setup

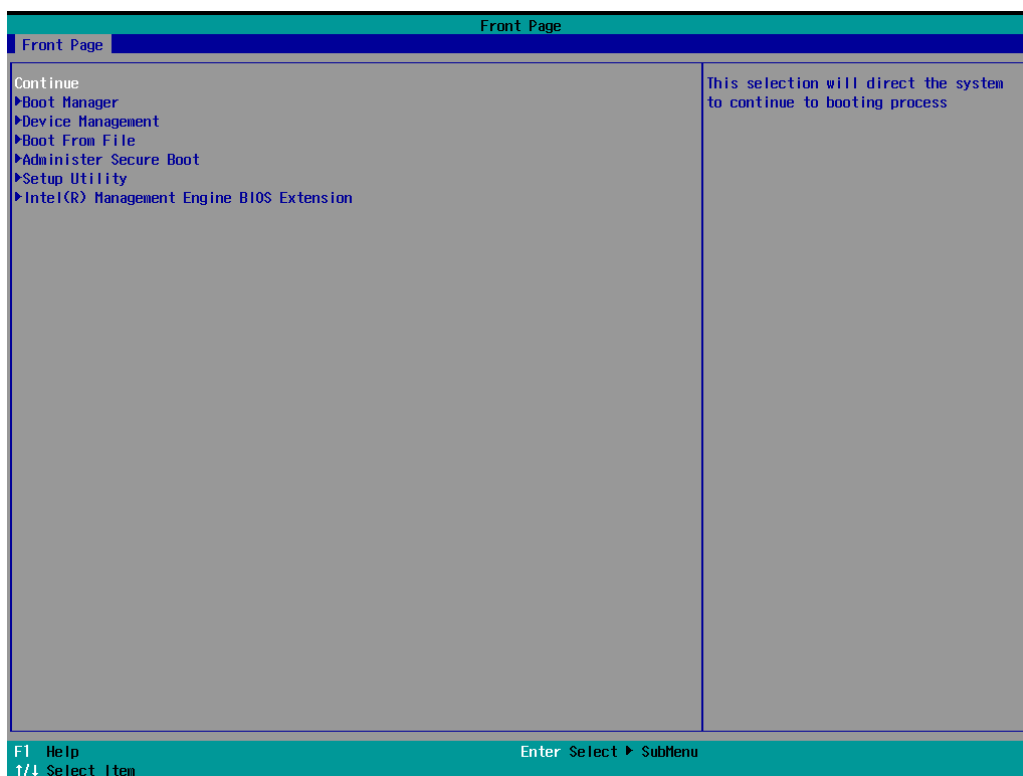
This chapter describes the BIOS settings of the RKP-C110 computer. The BIOS is a set of input/output control routines for peripherals, which are used to initialize system peripherals before the operating system is loaded. The BIOS setup allows the user to modify the system configurations of these peripherals' basic input/output interfaces.

Entering the BIOS Setup

To enter the BIOS setup utility, press the **F2** key while the system is booting up. The main **BIOS Setup** screen opens up with the following options:

- **Continue:** Continue to boot up
- **Boot Manager:** Select the device for booting up
- **Device Management:** Enter the device configuration menu
- **Boot From File:** Select the UEFI boot up file
- **Setup Utility:** Enter the BIOS configuration menu
- **Intel® Management Engine BIOS Extension:** Enter the AMT configuration menu

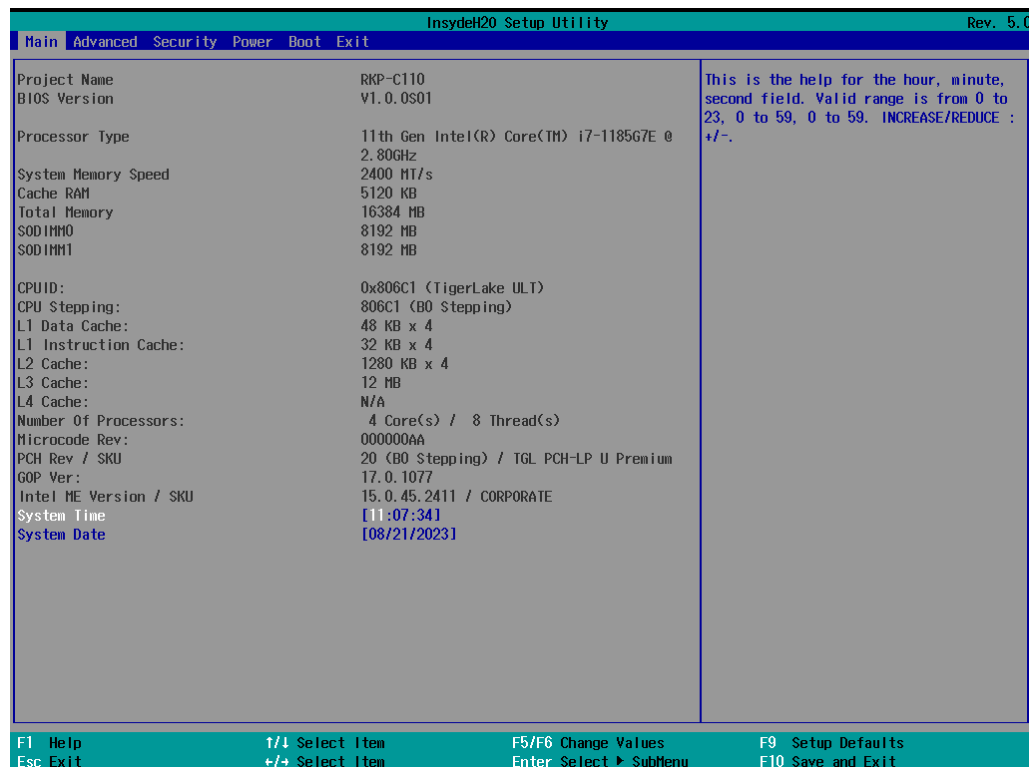
Select **F2** to enter the **BIOS configuration**.



When you enter **Setup Utility**, a basic description of each function key is listed at the bottom of the screen.

F1	General Help	↑ ↓ .	Select Item
F5/ F6	Change Values	← →	Select Menu
F9	Setup Defaults	ESC	Exit
F10	Save and Exit	ENTER	Select or go to Submenu.

The BIOS configuration screen will be shown when you enter the **Setup Utility** option, as shown in the following figure.

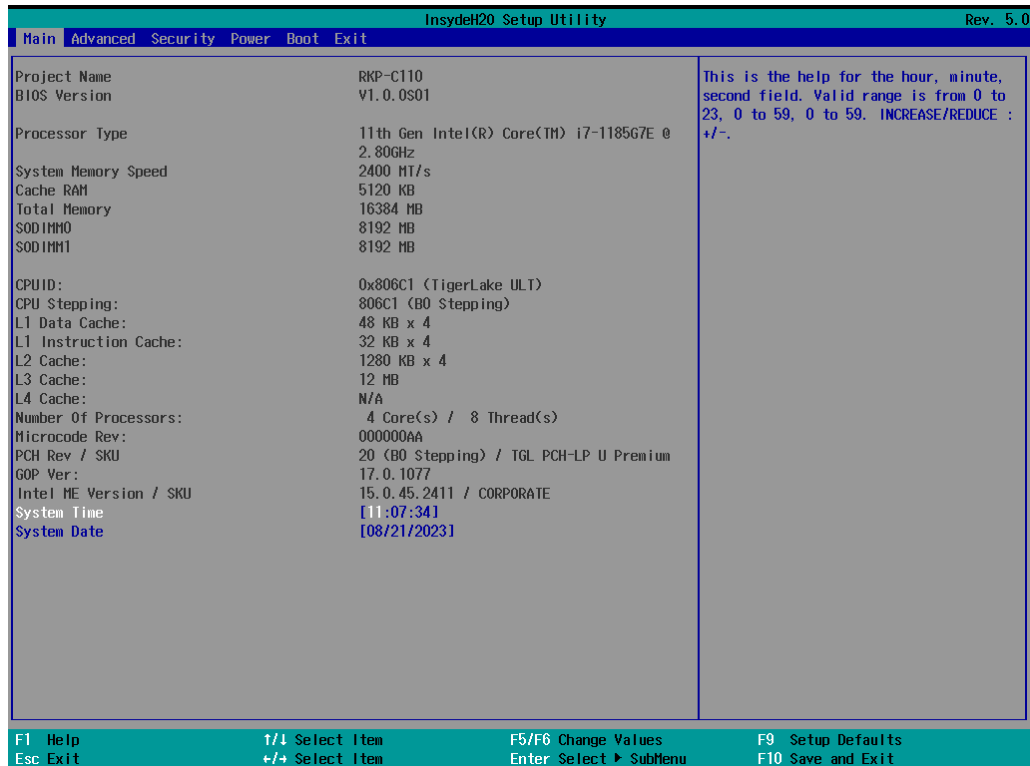


NOTE

The **Processor Type** information will vary depending on the computer model that you have purchased.

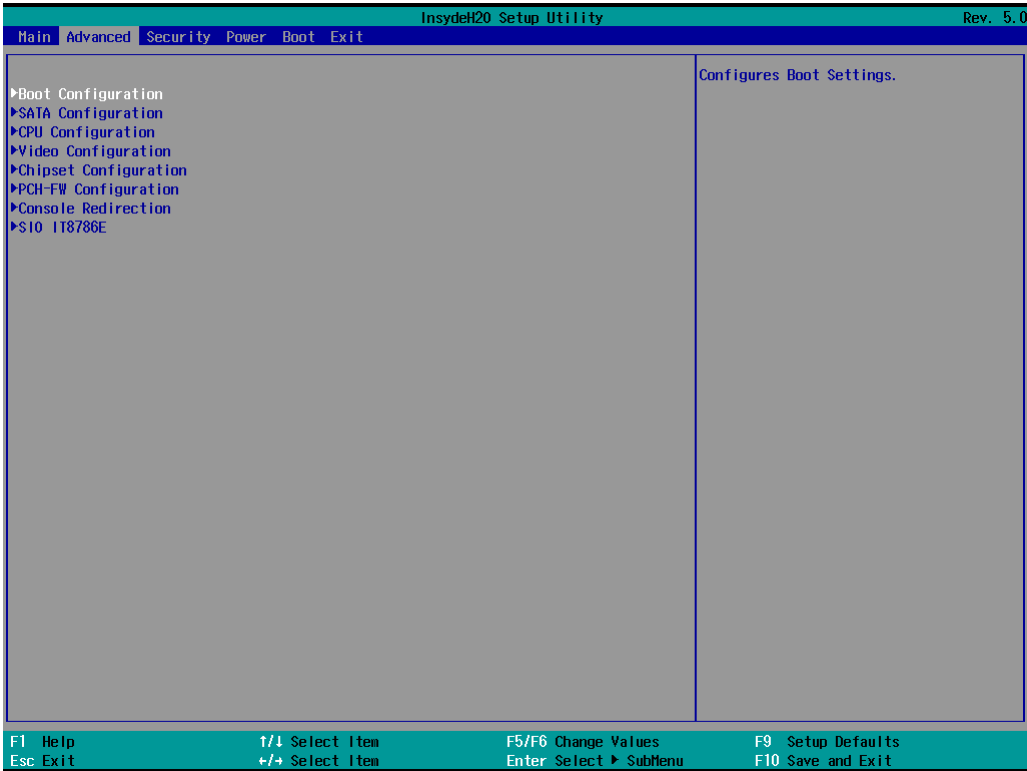
Main Page

The **Main** page displays basic system hardware information, such as model name, BIOS version, and CPU type.



Advanced Settings

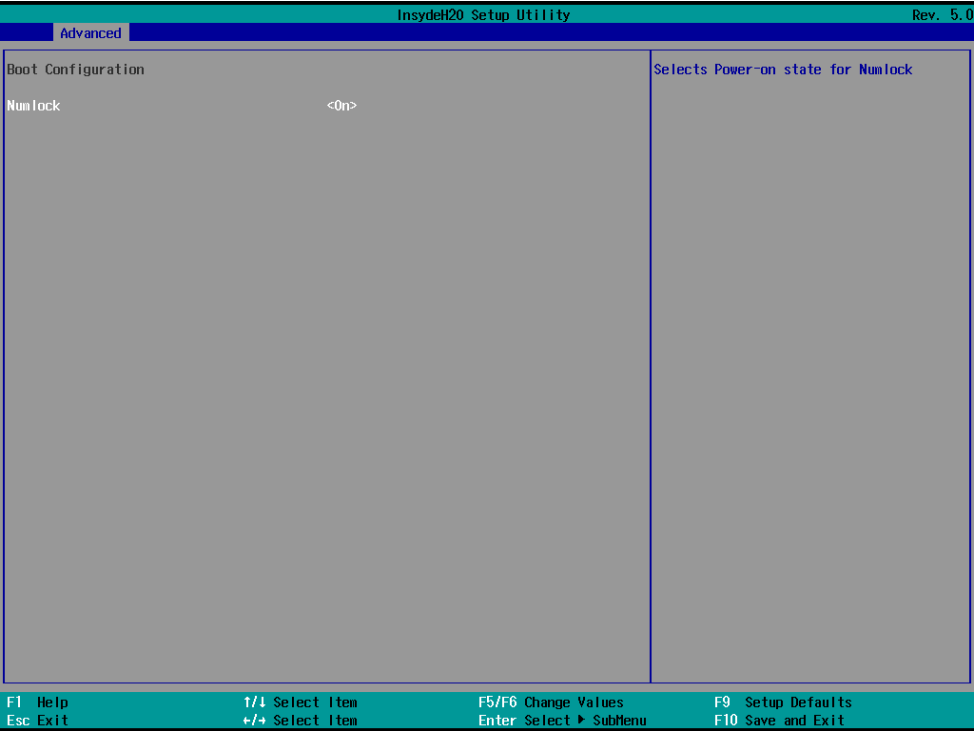
Select the **Advanced** tab in the BIOS setup utility to open the advanced features screen.



Boot Configuration

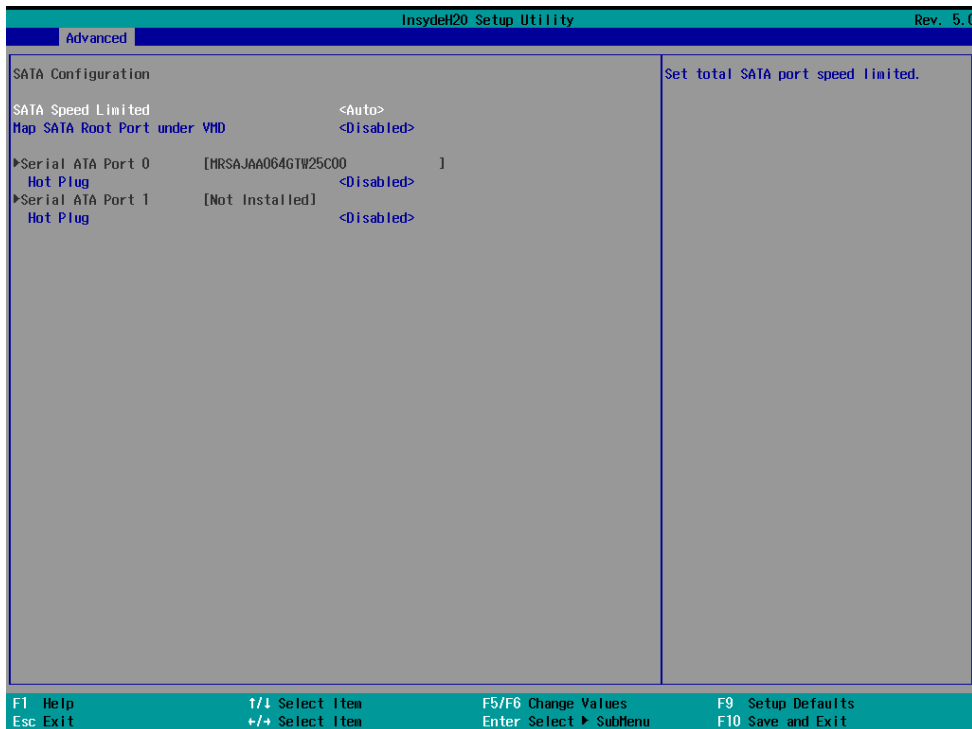
This item allows users to configure the default value of Numlock value.

Options: On (default), Off.



SATA Configuration

This section allows you to select the SATA speed limit and enable or disable the RAID mode.



SATA Speed Limited

Options: Auto (default), Gen 1, Gen 2, Gen 3

Map SATA Root Port under VMD

Options: Disabled (default), Enabled

Serial ATA Port

This setting displays information on the drives installed on your computer.

SATA Port—Hot Plug

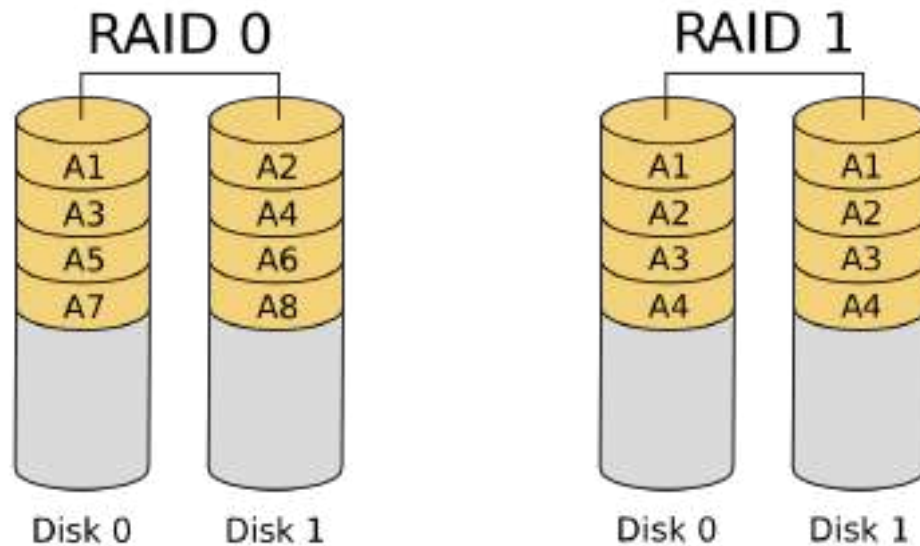
This item allows you to enable/disable hot-plugging capabilities (the ability to remove the drive while the computer is running) for the storage drives installed.

Options: Disabled (default), Enabled

RAID

You must set the **Map SATA Root Port under VMD** to enable redundant array of inexpensive disks technology. The device has two SATA interfaces, which only support RAID level 0 and RAID level 1.

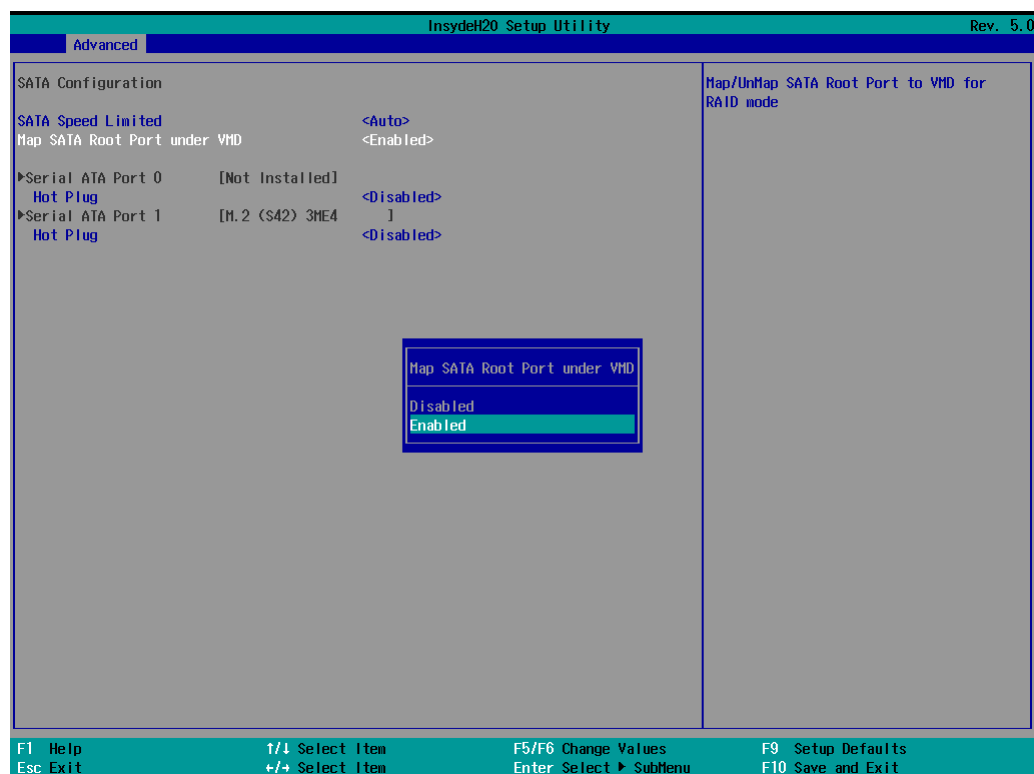
When using the continuous update policy, changes made to the data on the master drive while the system is not docked are automatically copied to the recovery drive when the system is re-docked. When using the on-request update policy, the master drive data can be restored to a previous state by copying the data on the recovery drive back to the master drive.



Source: https://en.wikipedia.org/wiki/Standard_RAID_levels for details.

Intel® Rapid Storage Technology

This section allows users to configure Intel® Rapid Storage Technology.



After enabling **Map SATA Root Port under VMD**, saving changes, and rebooting the system, you can select the **Device Manager** to configure the Intel® Rapid Storage Technology settings.



Intel(R) Rapid Storage Technology		
Create RAID Volume Name: Volume1 RAID Level: <RAID0 (Stripe)> Select Disks: SATA 0.0, MOXA FTM Plus-60 SSD < > A060C21C200019, 55.8GB < > SATA 0.1, M.2 (S42) 3HE4 CA12107260500029, 29.8GB Strip Size: <64KB> Capacity (MB): [0] ▶Create Volume Select at least two disks		Enter a unique volume name that has no special characters and is 16 characters or less.
F1 Help Esc Exit	↑/↓ Select Item ←/→ Select Item	F5/F6 Change Values Enter Select ▶ SubMenu F9 Setup Defaults F10 Save

CPU Configuration

InsydeH20 Setup Utility		Rev. 5.0
Advanced		
CPU Configuration Active Processor Cores <All> Hyper-Threading <Enabled> Turbo Mode <Enabled>		Number of cores to enable in each processor package.
F1 Help Esc Exit	↑/↓ Select Item ←/→ Select Item	F5/F6 Change Values Enter Select ▶ SubMenu F9 Setup Defaults F10 Save and Exit

Active Processor Cores

This item indicates the number of cores to enable in each processor package (the number of cores is dependent on the processor).

Options: All (default), 1, 2, 3

Hyper-Threading

This feature makes the processor resources work more efficiently, enabling multiple threads to run on each core. It also increases processor throughput, improving overall performance on threaded software.

Options: Disabled, Enabled (default)

Turbo Mode

Enable/Disable processor Turbo Mode (not supported in models with an Intel® Celeron® processor).

Options: Disabled, Enabled (default)

Video Configuration



DVMT Pre-Allocated

Selecting this option allows you to configure pre-allocated memory capacity for the IGD. Pre-allocated graphics memory is invisible to the operating system.

Options: 64M (default), 96M, 128M, 160M

DVMT: The amount of video memory your computer has is dependent on the amount of pre-allocated memory set for your system plus the Dynamic Video Memory Technology (DVMT). DVMT dynamically allocates system memory for use as video memory creating the most efficient use of available resources for maximum 2D/3D graphics performance.

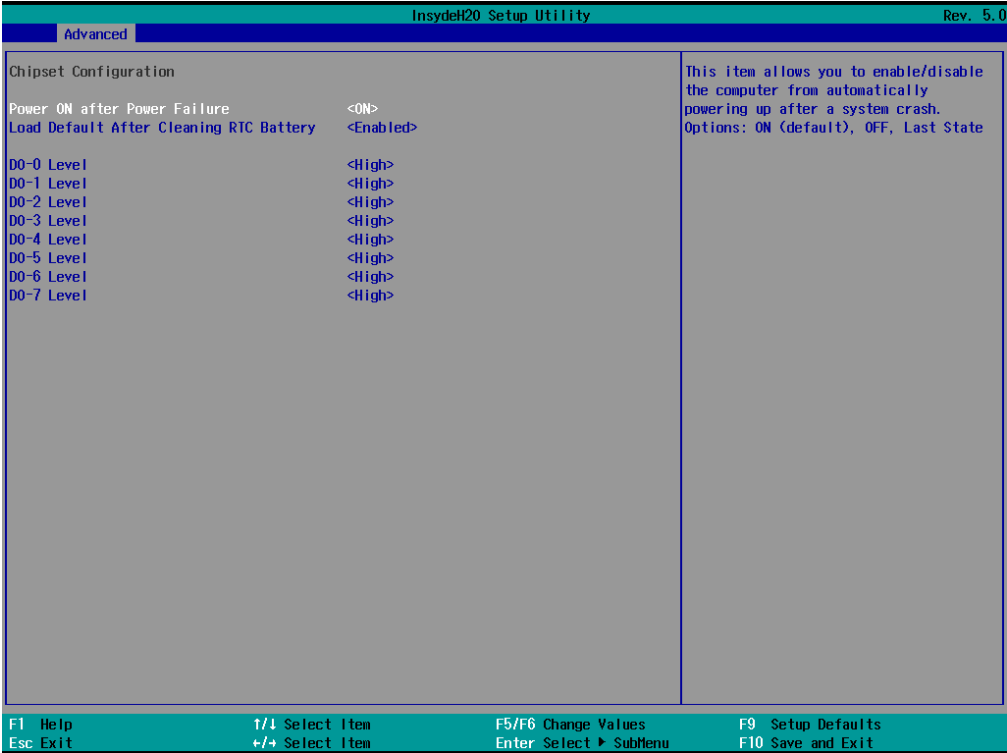
DVMT Total Gfx Mem

This option allows you to configure the maximum amount of memory DVMT will use when allocating additional memory for the internal graphics device.

Options: 256 MB (default), 128 MB, Max.

Chipset Configuration

This option allows you to configure the chipset settings.



Power ON after Power Failure

This option allows you to enable/disable the computer from automatically powering up after system power is re-enabled.

Options: ON (default), OFF, Last State

Load Default After Cleaning RTC Battery

System will load default when detecting RTC battery loss.

Options: Disabled, Enabled (default)

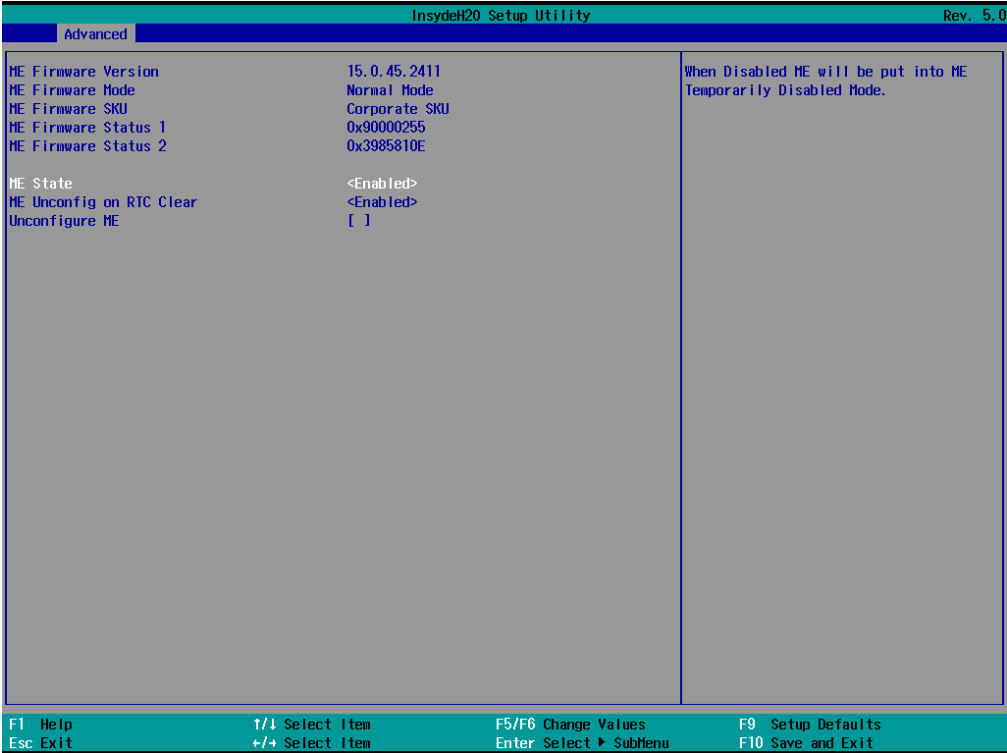
DO-X Level

This item allows users to set the DO to high or low.

Options: High (default), Low

PCH-FW Configuration

This section allows you to configure the PCH-FW settings.



ME State

When Disabled ME will be put into ME Temporarily Disabled Mode.

Options: Disabled, Enabled (default)

ME Unconfig on RTC Clear

When Disabled ME will not be unconfigured on RTC Clear.

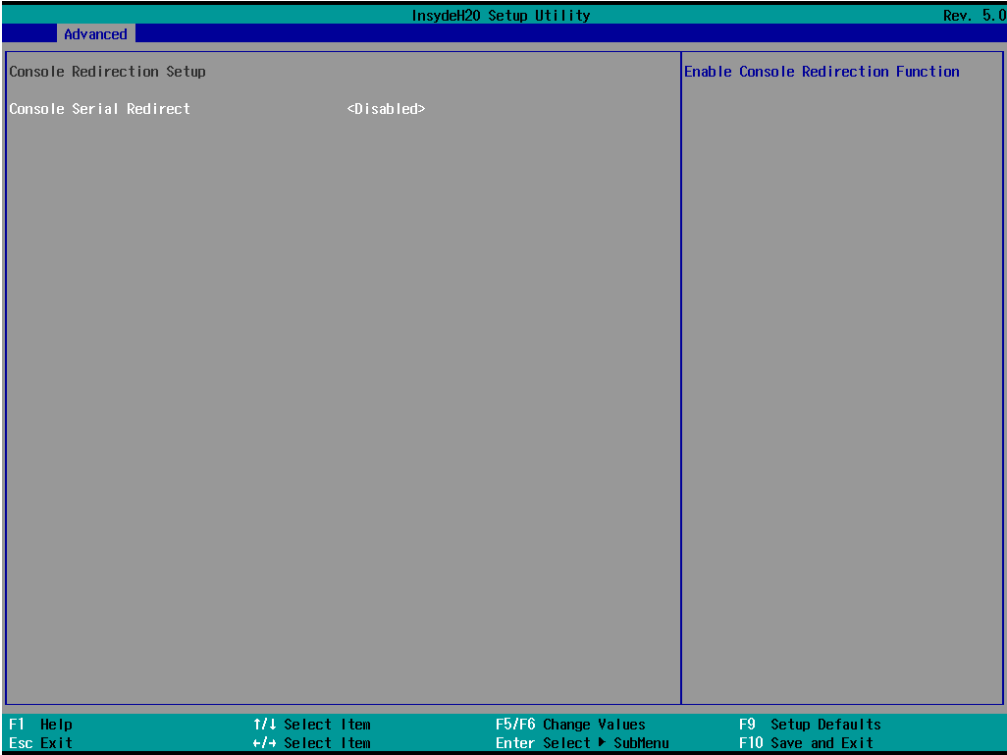
Options: Disabled, Enabled (default)

Unconfigure ME

Unconfigure ME by resetting MEBx password to default.

Console Redirection

This section allows you to configure the console redirection settings.



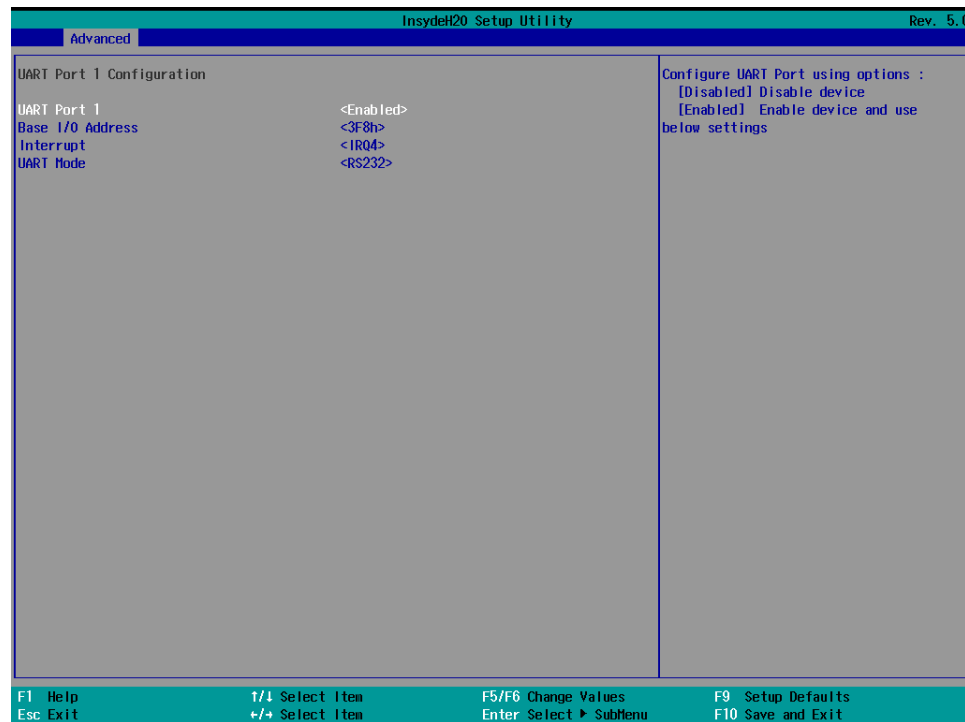
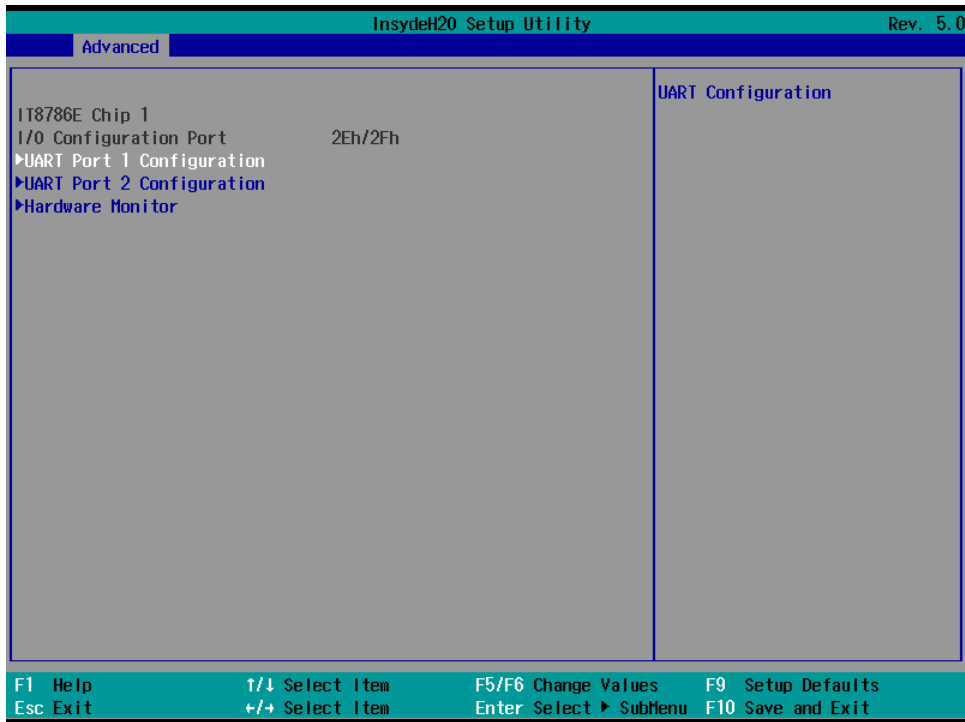
Console Serial Redirect

When the Console Redirection Function is enabled, the console information will be sent to both the display monitor and the serial port (COM1).

Options: Disabled (default), Enabled

SIO ITE8786E

This option allows users to configure serial port settings.



UART Port 1

This function allows users to configure the resources for the serial port 1.

Enable: Enables the Serial Port 1 connection (default)

Disable: Disables the Serial Port 1 connection

UART Port 2

This function allows users to configure the resources for serial port 2.

Enable: Enables the Serial Port 2 connection (default)

Disable: Disables the Serial Port 2 connection

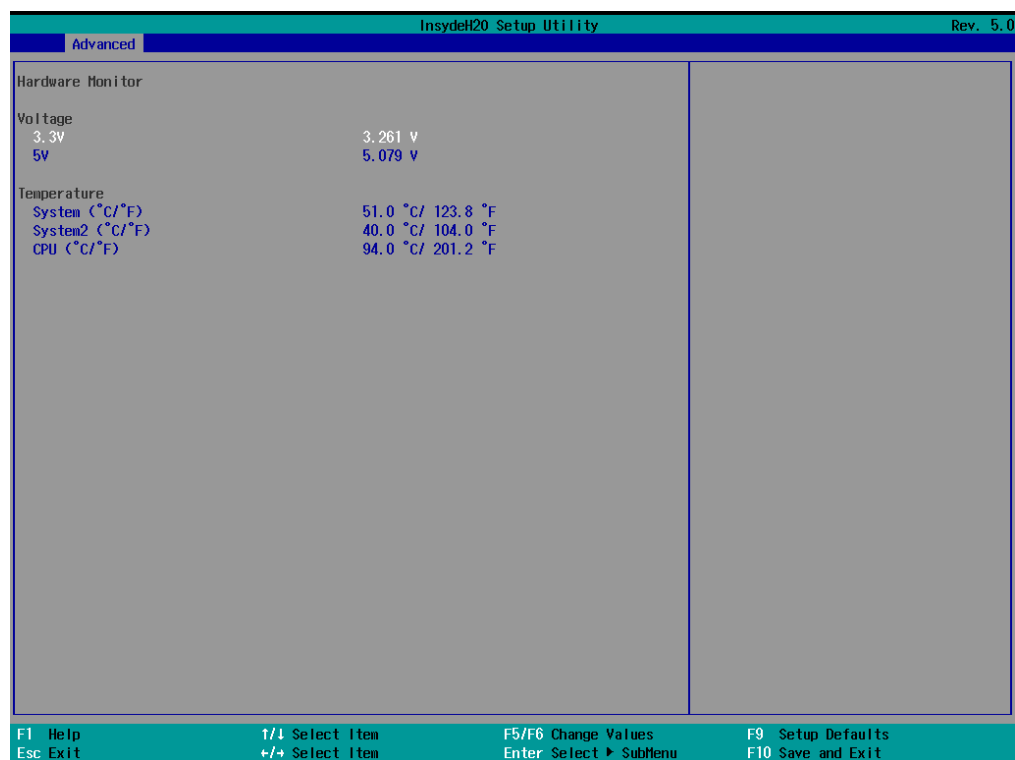


NOTE

The other UART ports can only be configured by OS utility

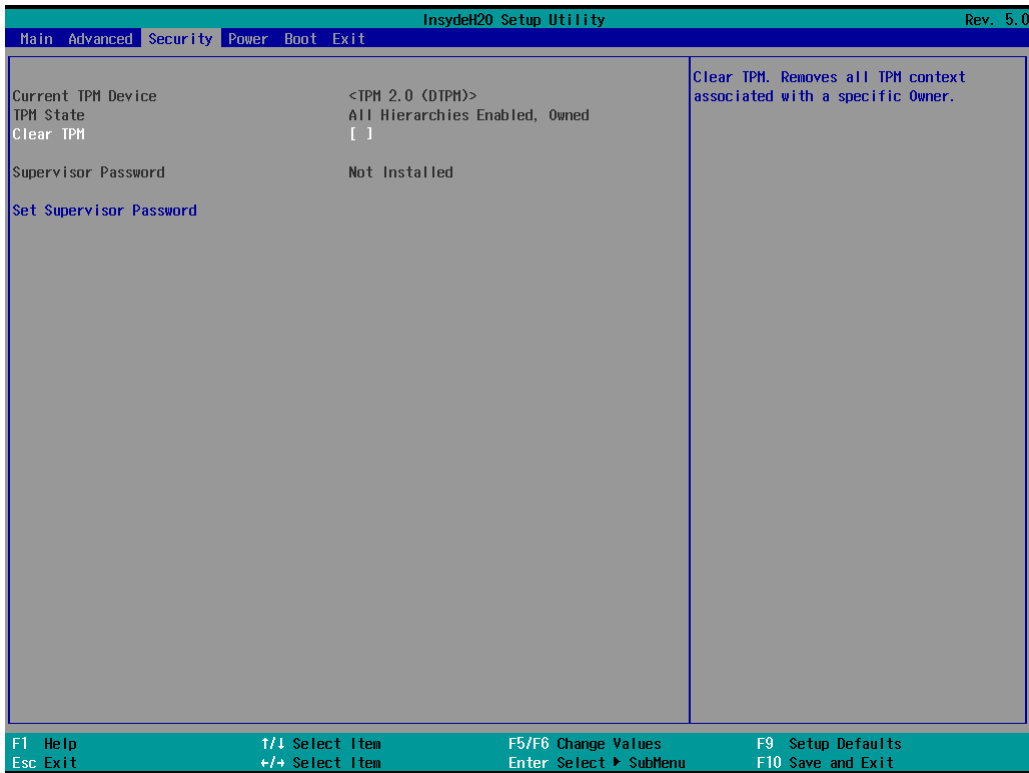
Hardware Monitor

This option allows users to view stats on the computer such as CPU and system temperature, voltage levels, and other chipset information.



Security Settings

The **Security** page includes security-related settings. You will require the supervisor password and user password.



Current TPM Device

This item indicates if the system has a TPM module configured and provides information on its type.

TPM State

This item allows users to view the current TPM settings.

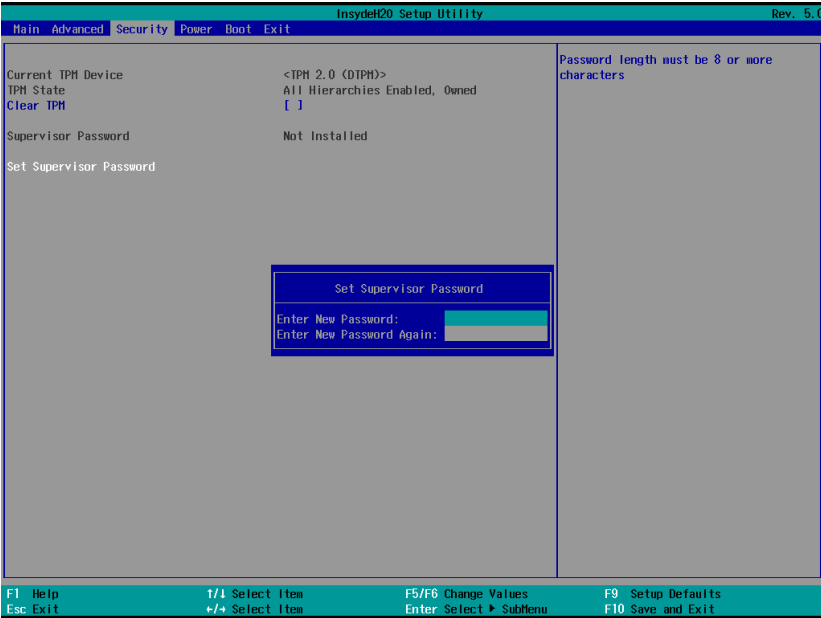
Clear TPM

This item allows users to remove all TPM context associated with a specific owner.

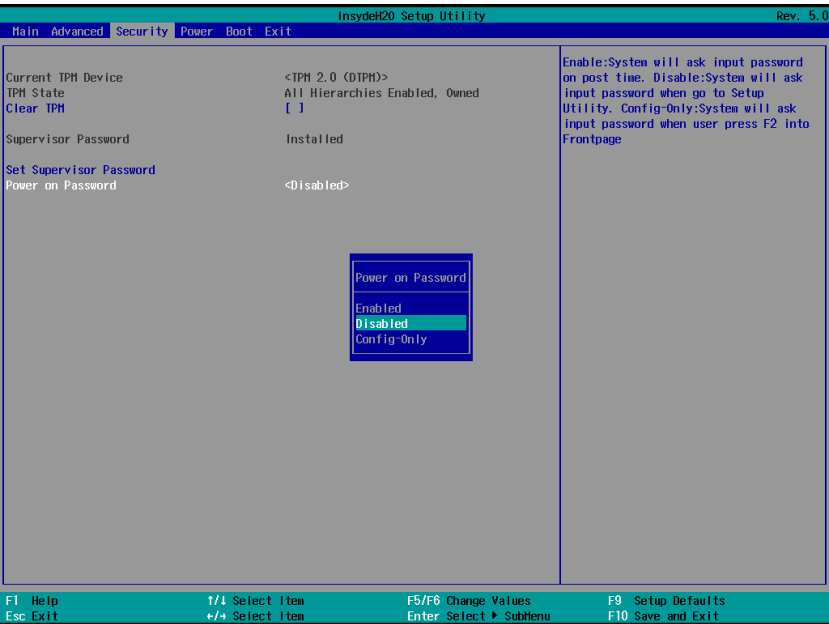
Set Supervisor Password

This item allows you to set the supervisor password. To set the password, select the **Set Supervisor Password** option, enter the password, and re-confirm the password.

To delete the password, select the **Set Supervisor Password** option and enter the old password; leave the new password fields blank, and then press enter.



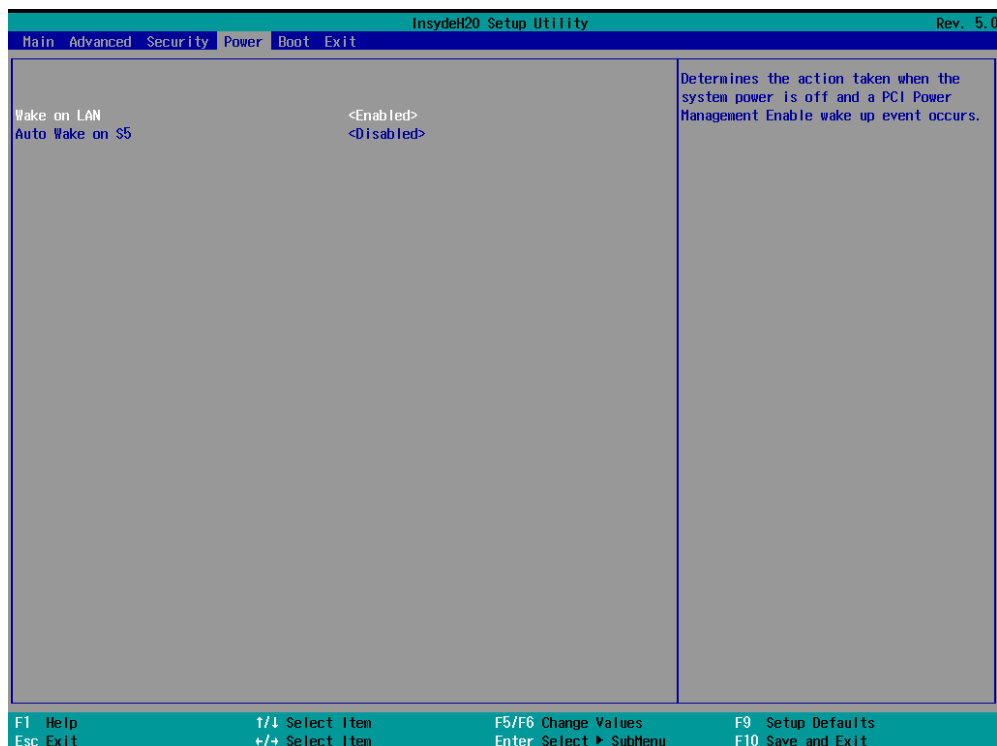
After setting the supervisor password, users can choose when the input password screen will pop up.



- Enable:* System will ask input password during post time.
- Disable:* System will ask for the password to go to the setup utility.
- Config Only:* System will only ask for the password when you select the config (F2) option

Power Settings

The Power page allows users to configure the power settings of the computer.



Wake on LAN

Enable this feature if you want to wake up the system by a LAN device from a remote host.

Options: Enabled (default), Disabled

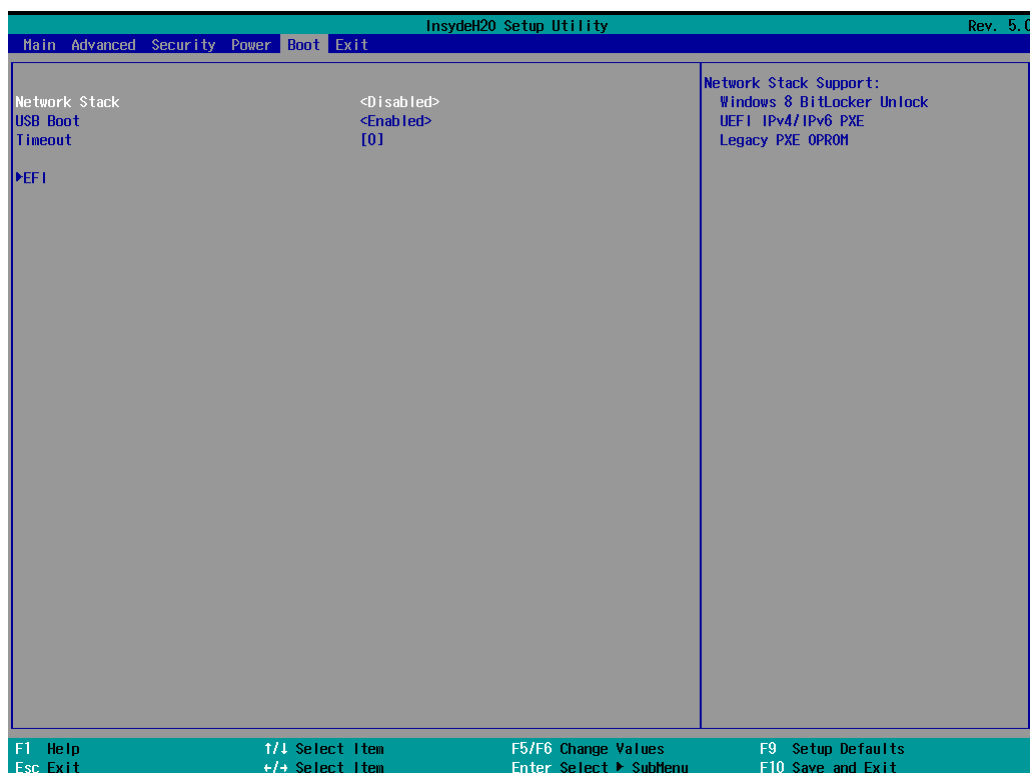
Auto Wake on S5

This option allows you to configure the computer to wake from S5 status. S5 stands for Soft Off, where the PSU remains engaged but power to all other parts of the system is cut. Auto wake on S5 schedules a soft reboot at certain periodic times that may be specified in the BIOS.

Options: Disabled (default); By Every Day (user specifies a regular daily time when the computer will power up); By Day of Month (user specifies a regular day each month when the computer will power up)

Boot Settings

The **Boot** page includes configuration settings for the boot-up process.



NOTE

If you have not added any storage to your computer, you will not see the EFI option.

Network Stack

This option is used to deploy an Internet Protocol (IP) stack. The IP stack provides an application library to open/close connections to remote devices and send/receive data between the remote devices.

Options: Disabled (default), Enabled

PXE Boot capability

PXE Booting is booting a system over a network. This option allows users to start PXE over IPv4 or IPv6

Options: Disabled (default), UEFI: IPv4, UEFI: IPv6, UEFI: IPv4/IPv6

USB Boot

Used to enable or disable boot-up from USB devices.

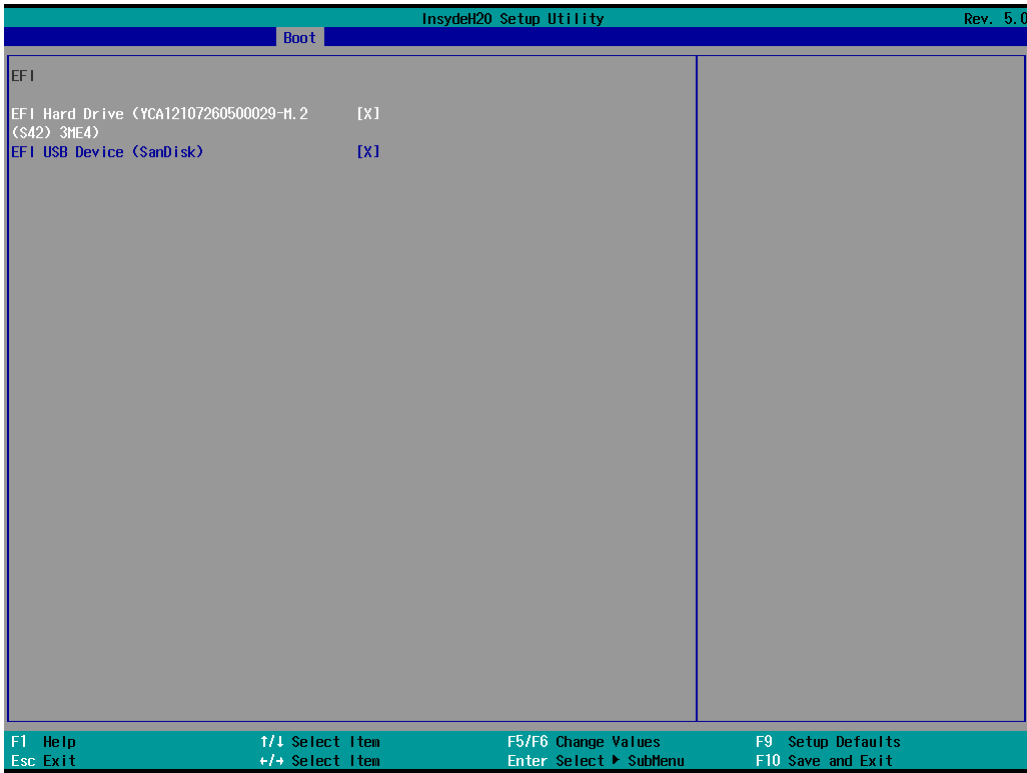
Options: Enabled (Default), Disabled

Timeout

This item allows users to set the number of seconds that the firmware will wait before booting with the original default boot option.

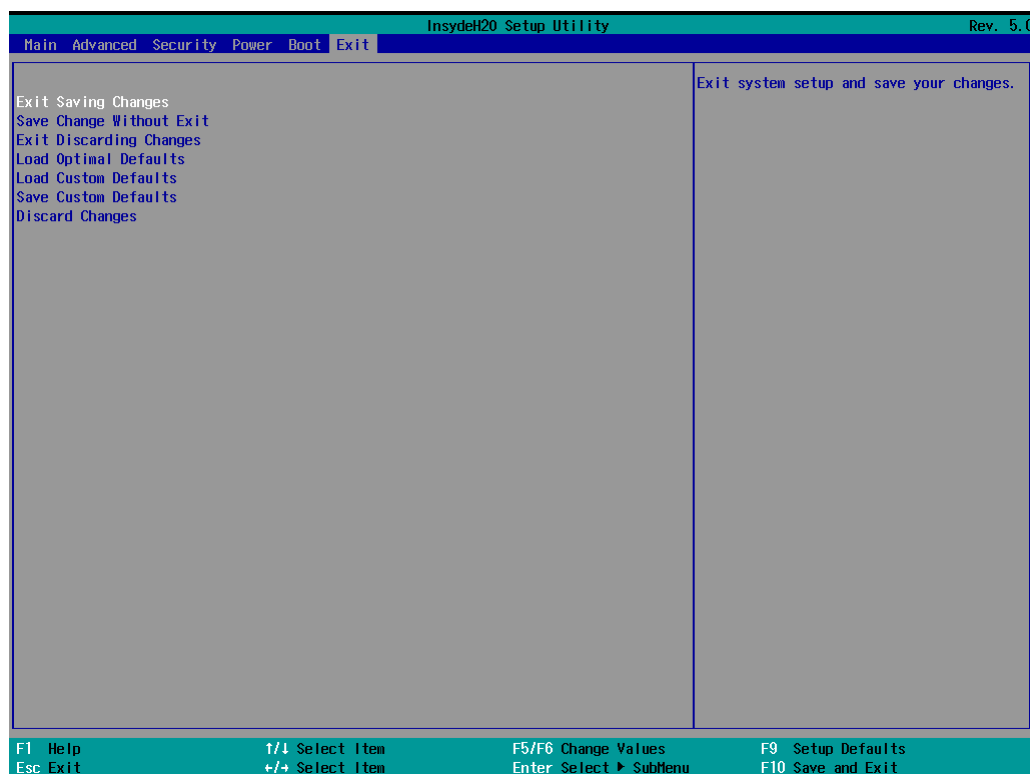
EFI

This option allows users to select the boot order. Use F5 (move down) or F6 (move up) to change the value.



Exit Settings

The **Exit** page includes options to exit the BIOS environment.



Exit Saving Changes

This option allows you to exit the BIOS environment and save the values you have just configured.

Options: Yes (default), No

Save Change Without Exit

This option allows you to save changes without exiting the BIOS environment.

Options: Yes (default), No

Exit Discarding Changes

This option allows you to exit without saving any changes that might have been made to the BIOS.

Options: Yes (default), No

Load Optimal Defaults

This option allows you to revert to the factory default BIOS values.

Options: Yes (default), No

Load Custom Defaults

This option allows you to load custom default values for the BIOS settings.

Options: Yes (default), No

Save Custom Defaults

This option allows you to save the current BIOS values as a custom default that may be reverted to at any time by using the **Load Custom Defaults** option.

Options: Yes (default), No

Discard Changes

This option allows you to discard all settings you have just configured.

Options: Yes (default), No

Enabling AMT

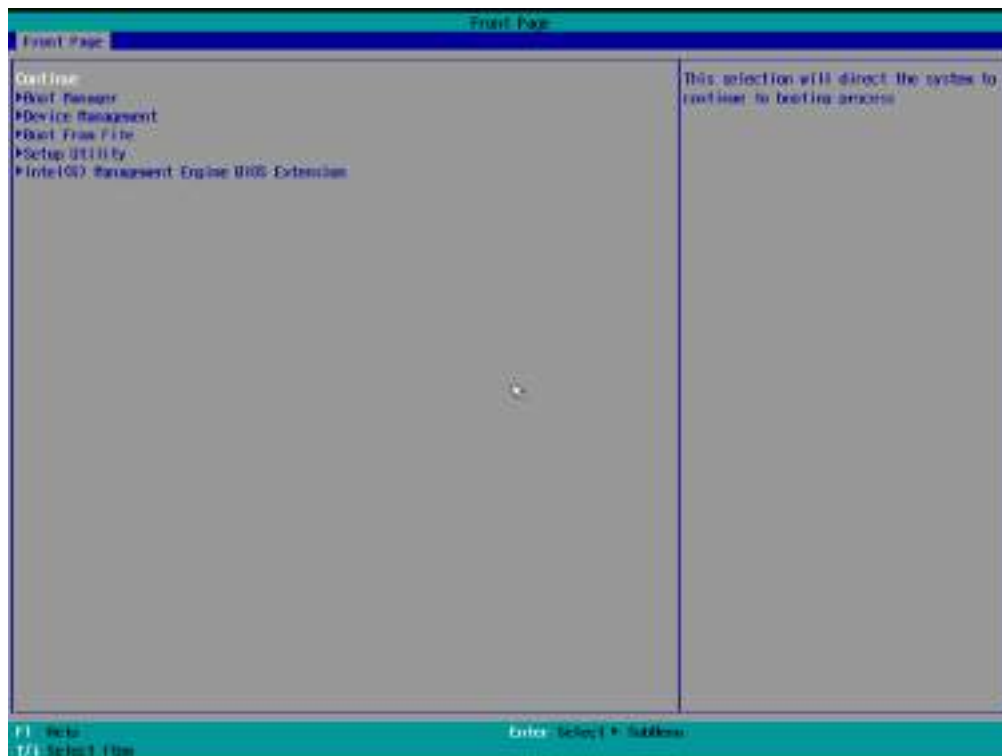


NOTE

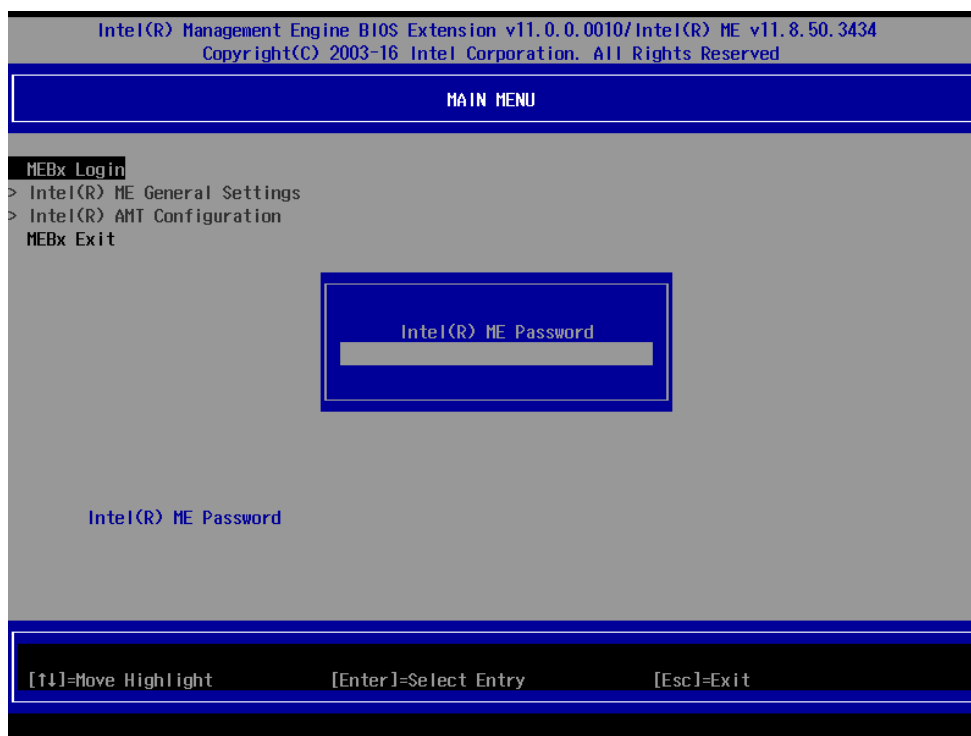
The AMT function is not supported in the models with Celeron and i3 CPU.

To enter the BIOS setup utility, press the "F2" key while the system is booting up. The main BIOS Setup screen will appear. Five options will be available:

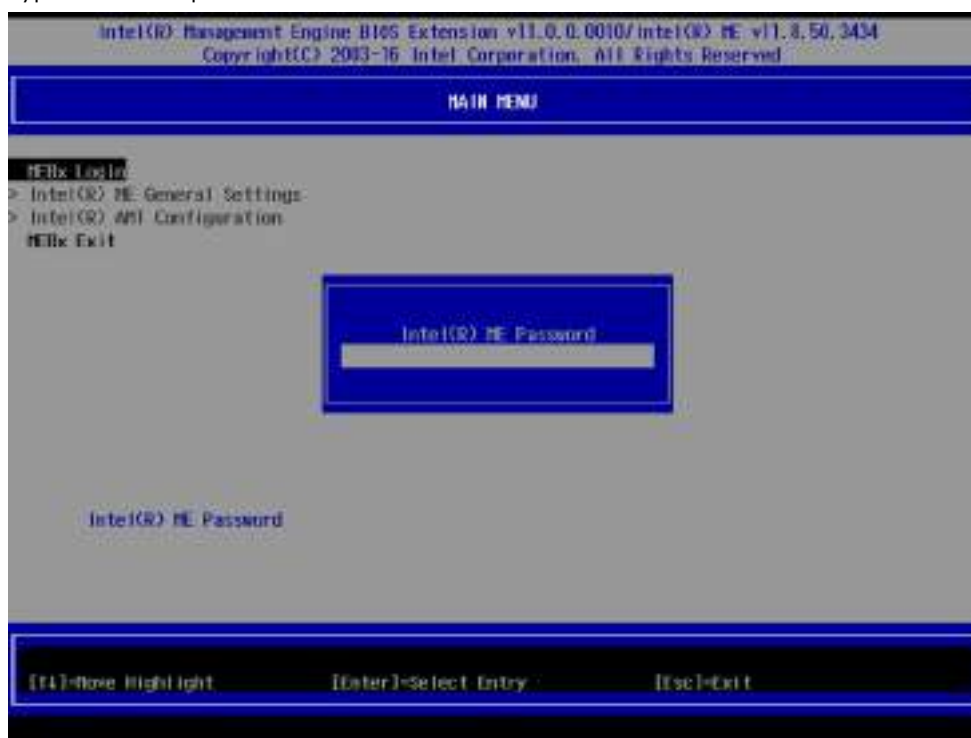
1. Select **Intel® Management Engine BIOS Extension** to enter the AMT configuration.



2. Press **<Enter>** to start the login procedure.



3. Type the default password: **admin**.



4. Type the new password. It must include both upper-case and lower-case characters, numbers, and special symbols. E.g., **Admin'12**.

Intel(R) Management Engine BIOS Extension v11.0.0.0010/Intel(R) ME v11.8.50.3434
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MAIN MENU

MEBx Login
> Intel(R) ME General Settings
> Intel(R) AMT Configuration
MEBx Exit

Intel(R) ME New Password

Intel(R) ME Password

[↑↓]=Move Highlight [Enter]=Select Entry [Esc]=Exit

5. Select **Intel® AMT Configuration** to enable remote access without a local user present for consent, select **User Consent**, and then select **User Opt-in** and change the value to **None**.
6. Set Static IP or DHCP by request.

Intel(R) Management Engine BIOS Extension v11.0.0.0010/Intel(R) ME v11.8.50.3434
Copyright(C) 2003-16 Intel Corporation. All Rights Reserved

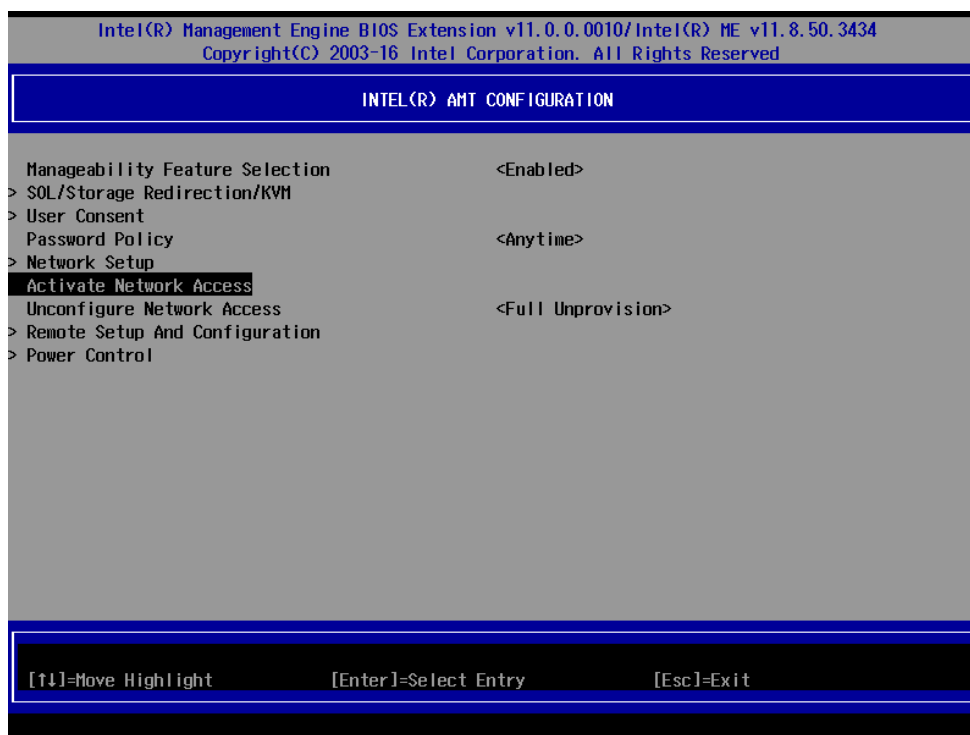
WIRED LAN IPV4 CONFIGURATION

DHCP Mode	<Disabled>
IPv4 Address	172.16.1.2
Subnet Mask Address	255.255.255.0
Default Gateway Address	0.0.0.0
Preferred DNS Address	0.0.0.0
Alternate DNS Address	0.0.0.0

Subnet mask (e.g. 255.255.255.0)

[↑↓]=Move Highlight [Enter]=Select Entry [Esc]=Exit

7. Set Active Network Access to enable remote access capability.



Using Active Management Technology (AMT)

You can use any AMT tool available to run the remote management function using a web browser.

1. Type the IP address of your computer as configured in the AMT configuration settings with port **16992**. The AMT logon screen will appear.



2. Click **Log On** and type the username (**admin**) and password.



NOTE

The AMT port is LAN 1.



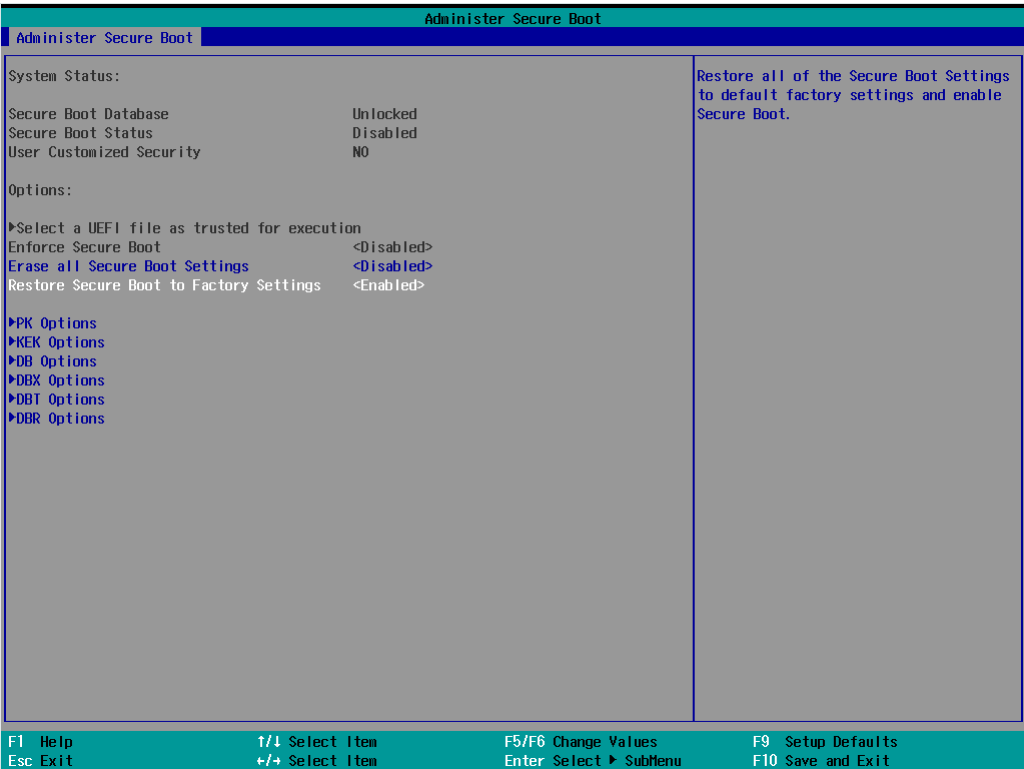
NOTE

For details, refer to the Intel® AMT Implementation and Reference Guide at:

https://software.intel.com/sites/manageability/AMT_Implementation_and_Reference_Guide/default.htm?url=WordDocuments%2Faccessingintelamtviathewebuiinterface.htm

Administering Secure Boot

Press F2 to go to the Administer Secure Boot.



Secure Boot helps computers resist attacks and infection from malware. The feature defines an interface between the operating system and BIOS. It detects tampering with boot loaders, key operation system files, and unauthorized option ROMs by validating their digital signatures.

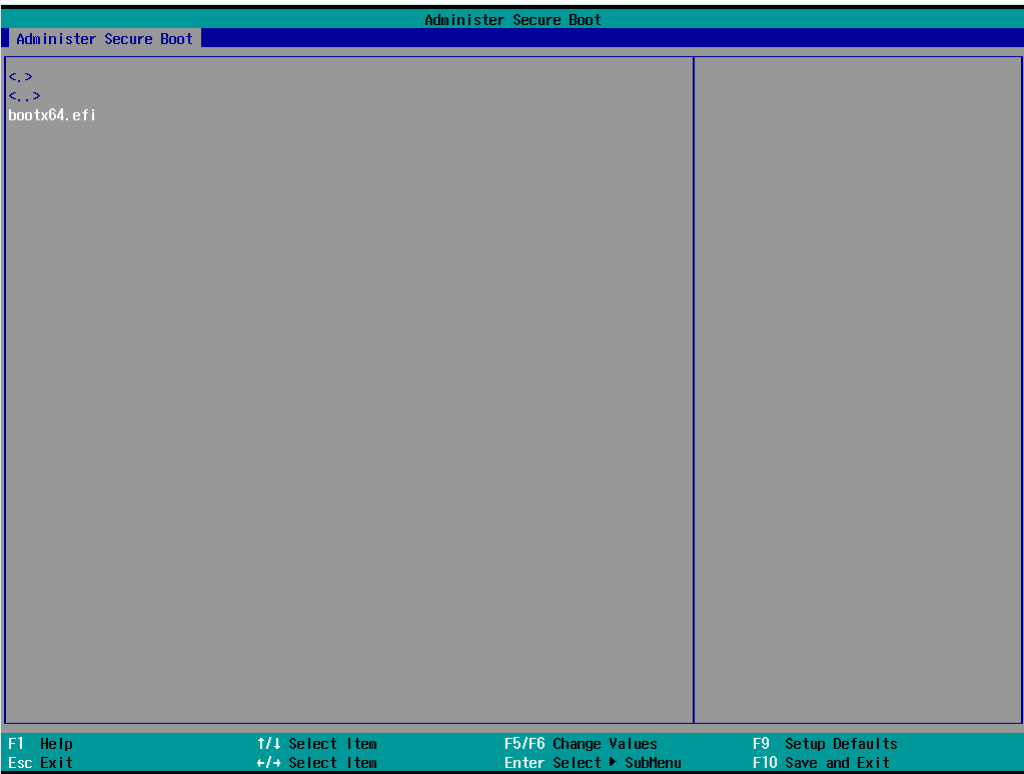
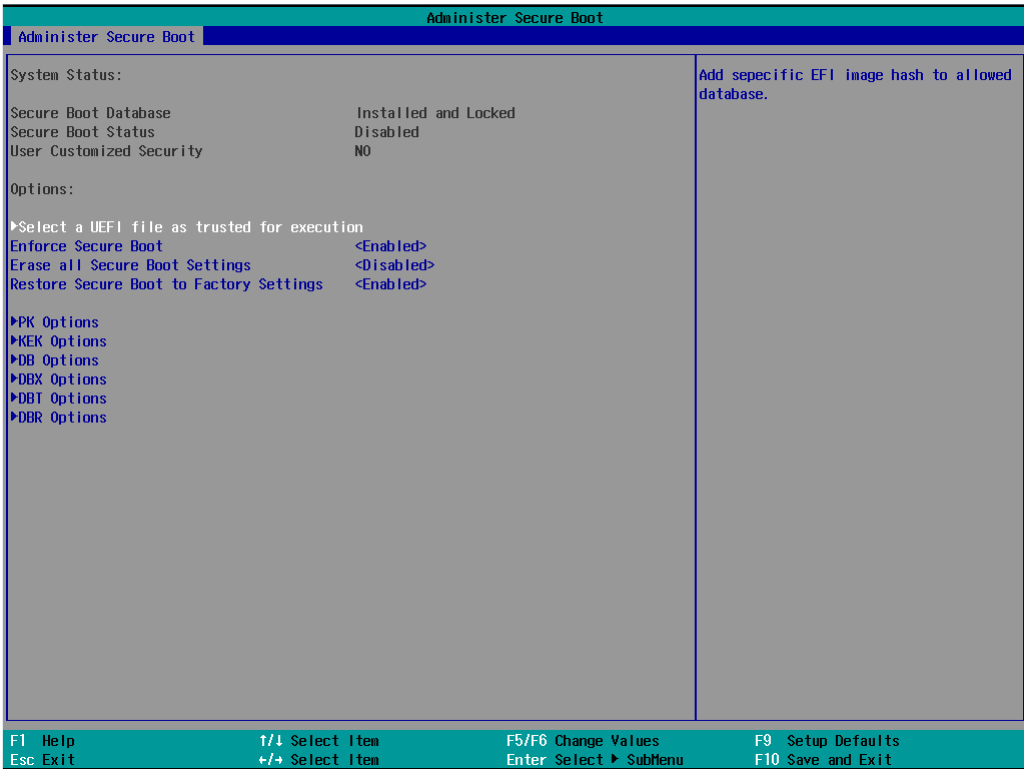
Enabling UEFI Secure Boot

Set as “enabled” in “Restore Secure Boot to Factory Settings” under Administer Secure Boot menu. Press F10 as save and exist.



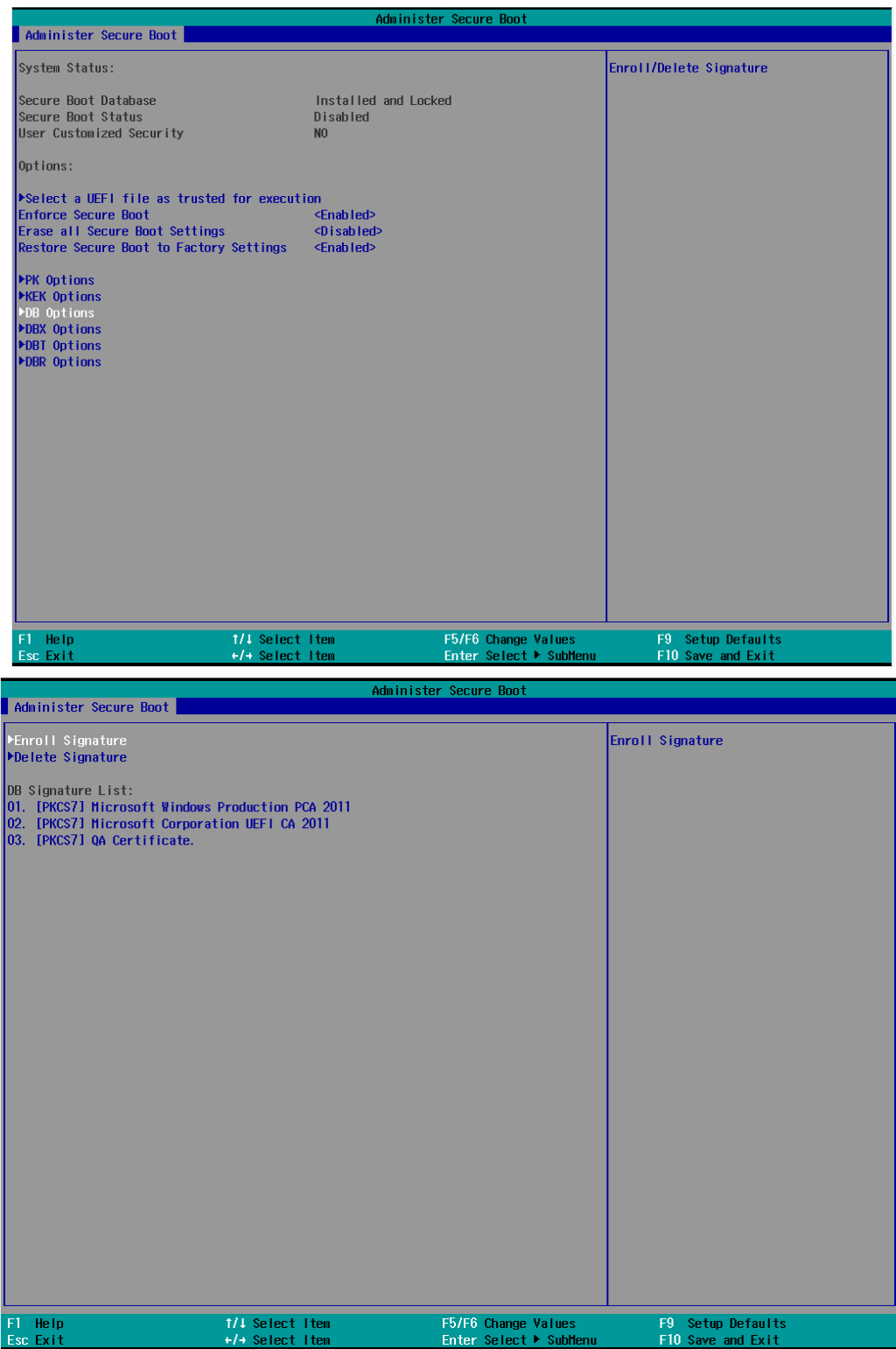
Moxa has included a Microsoft key in BIOS by default; if users cannot boot up using a non-Windows OS, use the following example:

Enroll EFI Image



Enter "Administer Secure Boot" once again and see "Select a UEFI file as trusted for execution", put loader into the database named and followed by the UEFI standard \EFI\BOOT\BOOT{machine type short-name}. E.g., efi\boot\BootX64.efi, Debian (EFI\debian\grubx64.efi), Suse (EFI\opensuse\grubx64.efi)

Enroll Customer Key



Enter "DB OPTION" and enroll your key. Please make sure your key is CRT format and uses RSA 2048 or better.

Upgrading the BIOS

This section describes how to upgrade the BIOS on your computer.



NOTE

Incorrect BIOS updates may permanently damage the computer. We strongly recommend that you contact the Moxa technical support team for assistance in obtaining all the necessary tools and the most current information before attempting to upgrade the BIOS on any Moxa device.

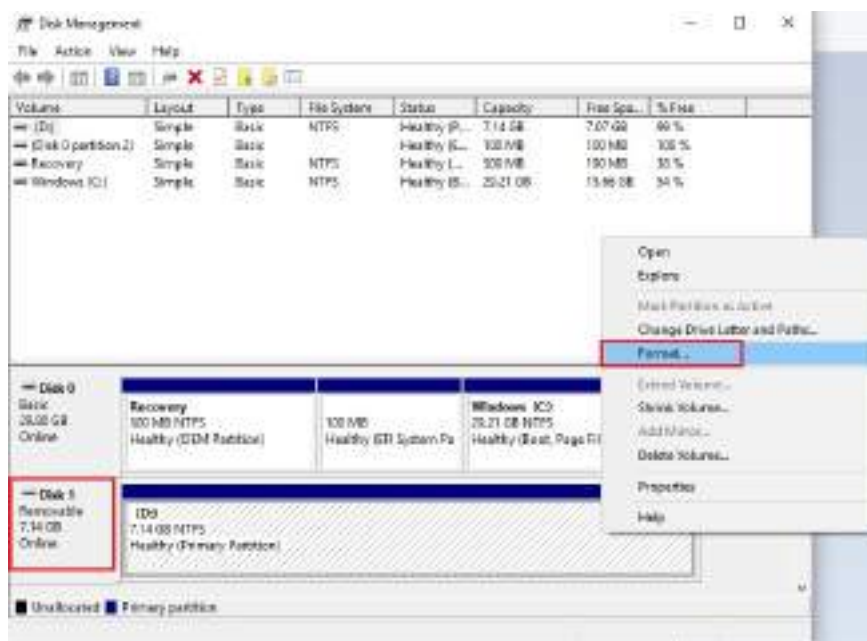
Step 1: Create a Bootable USB Disk

Before upgrading the BIOS, you must create a bootable USB drive for the system.

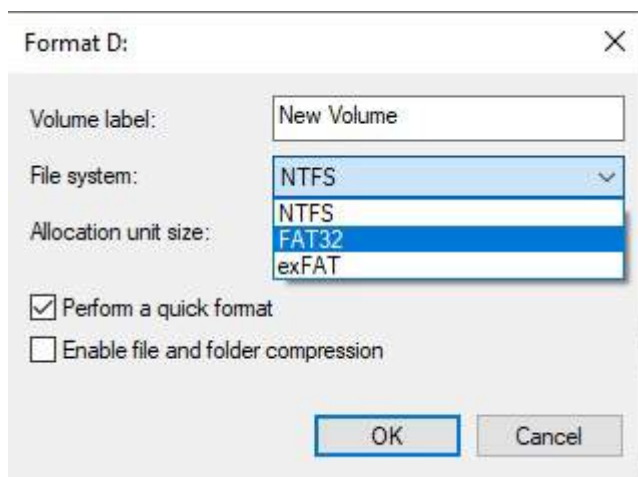
1. Insert a USB disk in the computer's USB drive.
2. Search for "format" and select **Create and format hard disk partitions**.



3. Right click on the USB disk and select **Format**.



4. Select **FAT32** for the **File System** and click **OK** to start formatting the USB disk.



Step 2: Prepare the Upgrade File

You must use the BIOS upgrade installation file to upgrade the BIOS. Contact Moxa's technical department for assistance.

1. Get the BIOS upgrade file (includes an **efi** folder and an **xxxx.efi** file)
2. Copy the **efi** folder and **xxxx.efi** file to the bootable USB disk.

Step 3: Run the Upgrade Program on the Computer

1. Reboot the computer from the USB device and press **F2** while it is booting up to go to the Boot Manager.

If the BIOS does not recognize the USB device as the boot device, the USB device may not have a partition table. Use the Windows command line tool **diskpart** to rebuild the partition table.

2. Select the USB disk to boot from.



The screen will switch to the SHELL environment.

3. Type **fs0:**, then go to the directory where the upgrade file is located and type **xxxxxxx.efi** (the name of the file is based on the upgrade file you get from Moxa).

```
Device mapping table
fs0      :Removable HardDisk - Alias hd24s0b blk0
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0x12,0x0)/HD(1,MBR,0x00DD3D80,0x3F,0xEB5FC1)
blk0     :Removable HardDisk - Alias hd24s0b fs0
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0x12,0x0)/HD(1,MBR,0x00DD3D80,0x3F,0xEB5FC1)
blk1     :Removable BlockDevice - Alias (null)
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0x12,0x0)
hd24s0b  :Removable HardDisk - Alias fs0 blk0
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0x12,0x0)/HD(1,MBR,0x00DD3D80,0x3F,0xEB5FC1)

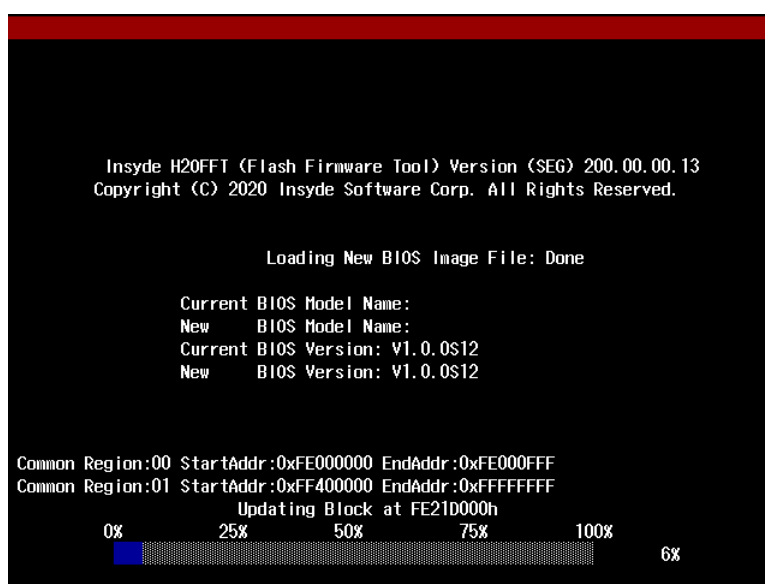
Shell> fs0:
fs0:\> xxxxxxx.efi
```

4. The upgrade program will run automatically. Wait for the process to complete.



ATTENTION

Do NOT switch off the power supply during the BIOS upgrade, since doing so may cause the system to crash.



- When the upgrade is done, the computer will automatically reboot.
You can check the BIOS version on the Main page.



If the system has more than one boot device, you will see more than one fsx (x represents the number of devices).

```
EFI Shell version 2.50 [22281.4149]
Current running mode 1.1.2
Device mapping table
fs0 :HardDisk - Alias hd33e0a2 blk0
      PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x4,0x0,0x0)/HD(2,GPT,0AC3B829-99B0-4FDE-844D-8A10C1D55C6C,0xFA000,0x32000)
fs1 :Removable HardDisk - Alias hd25r0b blk1
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,HBR,0x00DD3D80,0x3F,0xEB5FC1)
fs2 :Removable BlockDevice - Alias f25s0 blk2
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x12,0x0)
blk0 :HardDisk - Alias hd33e0a2 fs0
      PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x4,0x0,0x0)/HD(2,GPT,0AC3B829-99B0-4FDE-844D-8A10C1D55C6C,0xFA000,0x32000)
blk1 :Removable HardDisk - Alias hd25r0b fs1
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,HBR,0x00DD3D80,0x3F,0xEB5FC1)
blk2 :Removable BlockDevice - Alias f25s0 fs2
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x12,0x0)
blk3 :HardDisk - Alias (null)
      PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x4,0x0,0x0)/HD(1,GPT,5796BAEF-EC3F-447F-B4F1-21EB08DC5D57,0x800,0xF9800)
blk4 :HardDisk - Alias (null)
      PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x4,0x0,0x0)/HD(3,GPT,7C8FF3C6-53E8-4CF9-8141-65DF7EF04399,0x12C000,0x8000)
blk5 :HardDisk - Alias (null)
      PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x4,0x0,0x0)/HD(4,GPT,1AABAECE-BE17-4C27-AF60-E6C69977AC02,0x134000,0x3A6E800)
blk6 :BlockDevice - Alias (null)
      PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x4,0x0,0x0)
blk7 :Removable BlockDevice - Alias (null)
      PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
```

- Access each device path **fsx** (x is the device index), then type **ls** to view the content of the boot device until you locate the upgrade file and run it.

```
fs0:\> fs1:
fs1:\> ls
Directory of: fs1:\

06/27/19 11:43a <DIR>          16,384  efi
06/13/19 11:10a          17,974,704  820C100S16 efi
1 File(s) 17,974,704 bytes
1 Dir(s)
```

A. Safety Installation Instructions

A. RTC Battery Warning



ATTENTION

There is a risk of explosion if the wrong type of battery is used. To avoid this potential danger, always be sure to use the correct type of battery. Contact the Moxa RMA service team if you need to replace your battery.

Caution

There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions on the battery.

B. Fuse Warning

CAUTION: For continued protection against fire, replace only with the same type and rating of fuse.

C. Rack-mounting Warning

The following or similar rack-mounting instructions are included with the installation instructions:

(1) Elevated Operating Ambient: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

(2) Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

(3) Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

(4) Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

(5) Reliable Grounding: Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., by using power strips).