

User Operation Manual

PC60XX miniBOX Fanless Box PC



Publication List

Product model	Company
PC60XX	Shanghai Panelmate Electronics Co., LTD

Review/Approval

	Name/function/Company	Signature
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Declaration Of Conformity

These restrictions are for system operation in a commercial environment from harmful interference in the operation of the system in a commercial environment. This device generates, uses and transmits radio frequency energy. If not properly installed and used correctly to the manual instructions, it may cause harmful interference to radio communications. However, even if the installation and use of the manual instructions are followed, there is no guarantee that there will be no interference. If this device will cause harmful interference with radio or television signal reception, the user can confirm by turning the device on and off. When the device produces harmful interference, the user can take the following measures to solve the interference problem:

1. Adjust the direction or position of the receiving antenna.
2. Increase the distance between this device and the receiver.
3. Plug the power connector of this device into a power socket with different circuit from the receiver.
4. For technical support, consult your dealer or an experienced radio technician.

Technical Support And Service

1. For the latest information and documentation of this product, please visit our official website www.panelmate.cn
2. If you need technical support, please contact your local distributor, sales representative customer service center. Before technical consultation, the user must collect the following product information:
 - Product name and serial number
 - Description of peripheral additional devices
 - Description of the user software (operating system, version, application software, etc.)
 - A complete description of the problem with the product
 - The full content of each error message

Safety Instruction

1. Before installing, wiring, operating, and checking the product, it is necessary to carefully read this manual and related manuals introduced in the manual, and operate the product correctly with full attention to safety.
2. Please keep this user manual for future reference.
3. Please unplug the power cord from the socket before cleaning the device with a damp rag. Do not use liquid or decontamination sprays to clean the equipment.
4. For devices that use power cords, there must be an easily accessible power socket around the device.
5. Ensure that the device is placed on a reliable surface before installation. An unexpected fall may damage the device.
6. Before you connect the device to the power socket, make sure that the power socket voltage meets the requirements.
7. Please place the power cord in a position where people cannot easily trip, and do not cover any debris in the power line.
8. Please pay attention to all warnings and attention signs on the device.
9. If you do not use the device for a long time, please disconnect it from the power socket to avoid the device being damaged by excessive voltage fluctuations.
10. Do not allow any liquid to flow into the equipment, you must disconnect to avoid fire or short circuit.
11. Please do not turn on the device by yourself. To ensure your safety, disconnect all external power supplies used by the system before turning on the device. Turn on the device by a certified professional engineer with sufficient electrical knowledge.

In case of the following situations, please be repaired by professional personnel:

- The power cord or plug is damaged
- There is liquid flowing into the equipment
- The device does not work properly, or you cannot make it work properly through the user manual
- Equipment falls or is damaged
- The equipment has obvious appearance damage

Please do not store the device in an environment beyond our recommended temperature range, that is, not lower than -20 ° C or higher than 60 ° C, otherwise it may damage the device.

Disclaimer

All components are provided with specific hardware and software configurations are suitable for application software. Unauthorized modification and alteration of hardware or software configuration beyond the scope of the document is prohibited, otherwise Shanghai Panelmate Electronics Co., Ltd. shall not be liable for any resulting liability arising therefrom.

The following actions are not within the scope of responsibility of the Company:

- Failure to comply with the provisions of this document
- Improper use
- Operated by untrained personnel
- Unauthorized replacement of parts

Employee Qualifications and Responsibilities

All operations involving software and hardware should only be performed by qualified personnel with knowledge of control and automation engineering. Qualified personnel must understand the management of control teams and related networks.

All interventions must have knowledge of control planning, and qualified personnel must be familiar with existing standards and guidelines for automated environments.

The operator must ensure that:

- Products are used only as intended
- The product runs in good condition and works normally
- Products are operated, maintained and repaired only by qualified and authorized personnel
- Regularly receive guidance from personnel on safety and be familiar with the operating manual, especially the safety instructions contained in this document
- The operating manual is in good condition, complete and always available for reference at the product location

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Chapter 1 Overview

1.1 File Content

This document contains the information you need to use the product during the applicable phase of the product's life cycle, as follows:

- Specification and model
- Product size
- Interface definition
- Mounting method
- Safety instruction

1.2 Safety Notes

For safety, the following icons are used in this document to provide you with more security information tips:

Icon	Description
	Warning: Indicates a potentially hazardous situation that, if not avoided, will result in death, serious injury, or significant property damage
	Danger: indicates an imminent hazardous situation that, if not avoided, will result in death, serious injury, or significant property damage
	Tip: Indicates important information

Chapter 2 Introduction

2.1 Product Overview

PC60XX series product is a book-type mini fanless industrial computer. The material is a compact aluminum-magnesium alloy profile casing. Considering the heat dissipation system, the left side adopts a large-area aluminum fin design.

Equipped with Intel® Celeron low-power processor and complete functional interfaces, it provides industrial-grade computing solutions to customers in need;

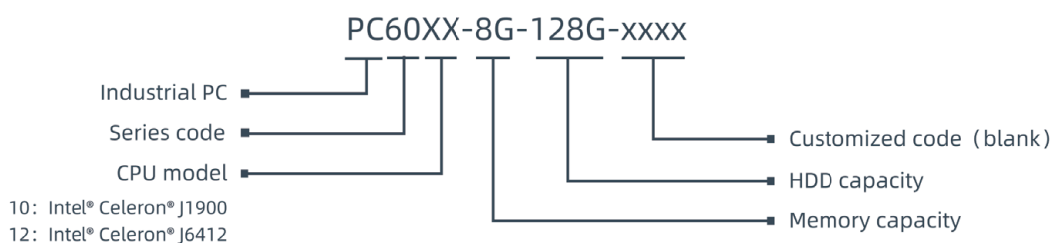
Products are widely used in automation, machine vision, robotic applications, intelligent gateways, etc.

2.2 Product Features

- Compact aluminium-magnesium alloy profile housing, Large aluminium fins design to ensure the reliability and heat dissipation
- Din rail mounting
- 3 x USB
- 1 x RS485 + 1 x RS232
- Intel® Celeron® J6412 和 Intel® Celeron® J1900 processor optional
- Extendable WIFI/4G
- Fanless, operating temperature -20~70°C
- DC 9~36V

2.3 Name Rule

Product naming rules:



2.4 Product Specification

2.4.1 PC6010 product specification

PC6010 is powered by Intel® Celeron® J1900

Description	PC6010	
Processor	CPU	Intel® Celeron® J1900
	Frequency	Quad Core 2.42GHz
	Cache	2MB
	Memory	1 x SO-DIMM DDR3L 1333 Max: 8GB
	Storage	1 x mSATA
I/O	Network (LAN)	2 x Intel 8111 Gbe LAN + 1 x Intel i210 Gbe LAN
	USB	1 x USB3.0 + 2 x USB2.0
	COM	1 x RS232, 1 x RS485
	Pilot Lamp	1 x Power light, 1 x HDD light, 1 x Status light
	Input Voltage	DC 9~36V, 4 pin terminal
Interface	HDMI	Support max resolution:2560*1600 @60Hz
	DP	Support max resolution:1920*1080 @60Hz
OS	Operation System	Windows 7, Windows 10, Linux, etc
Physical	Dimension (LxWxH)	140mm x 40.6mm x 104mm (5.51" x 1.60" x 4.09")
	Box Structure	Compacted aluminium-magnesium alloy profile housing,seal and dust-proof design,GND protection
	Mounting	Din rail
	Power	25W

Environment	Operating Temperature	-20~70℃
	Storage Temperature	-40~80℃
	Relative Humidity	5~95% (Non condensation)
	Shock	Operating 10G peak acceleration(11 ms duration), follow IEC 60068-2-27
	Vibration	Operating Random Vibration Test: 5~500HZ, 1Grms@with HDD;2Grms@with SSD, follow IEC 60068-2-64
	EMC	CE/FCC Class A

2.4.2 PC6012 Product specification

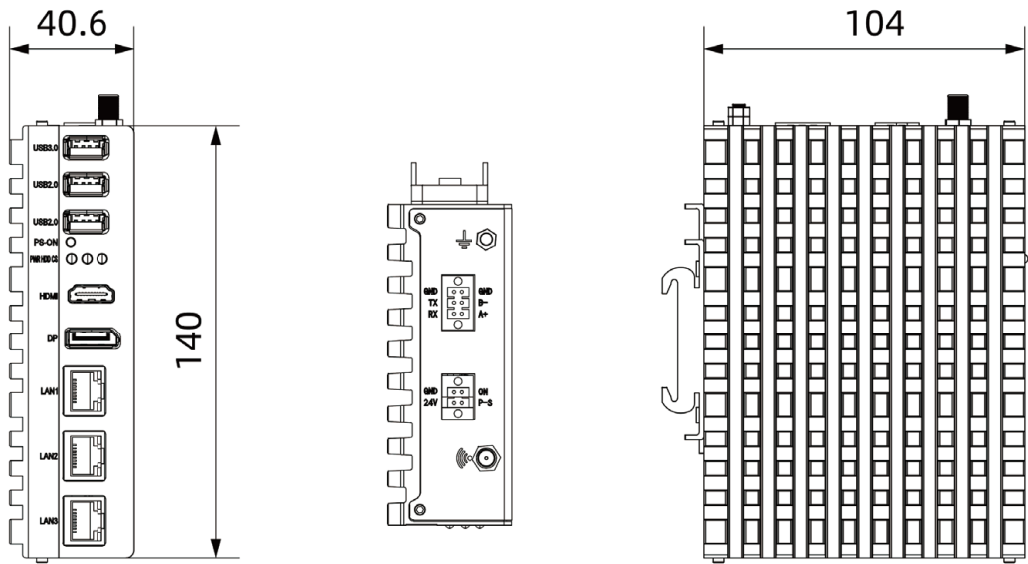
PC6012 is powered by Intel® Celeron® J6412

Description	PC6012	
Processor	CPU	Intel® Celeron® J6412
	Frequency	Quad Core 2.60GHz
	Cache	1.5MB
	Memory	1 x SO-DIMM DDR4 3200MT Max: 32GB
	Storage	1 x mSATA
I/O	Network (LAN)	2 x Intel i210 Gbe LAN + 1 x Intel i226-V Gbe LAN
	USB	1 x USB3.0 + 2 x USB2.0
	COM	1 x RS232, 1 x RS485
	Pilot Lamp	1 x Power light, 1 x HDD light, 1 x Status light
	Input Voltage	DC 9~36V, 4 pin terminal

Interface	HDMI	Support max resolution:4096*2160 @60Hz
	DP	Support max resolution:3840*2160 @60Hz
OS	Operation System	Windows 10, Linux, etc
Physical	Dimension (WxHxD)	140mm x 40.6mm x 104mm (5.51" x 1.60" x 4.09")
	Box Structure	Compacted aluminium-magnesium alloy profile housing,seal and dust-proof design,GND protection
	Mounting	DIN rail
	Power	25W
Environment	Operating Temperature	-20~70°C
	Storage Temperature	-40~80°C
	Relative Humidity	5~95% (Non condensation)
	Shock	Operating 10G peak acceleration(11 ms duration), follow IEC 60068-2-27
	Vibration	Operating Random Vibration Test: 5~500HZ, 1Grms@with HDD;2Grms@with SSD, follow IEC 60068-2-64
	EMC	CE/FCC Class A

2.5 Product Size

PC60XX Dimension drawing:



2.6 Product Interface Definition

The PC6960 Series interface definition is shown in Figure 2-6-1:

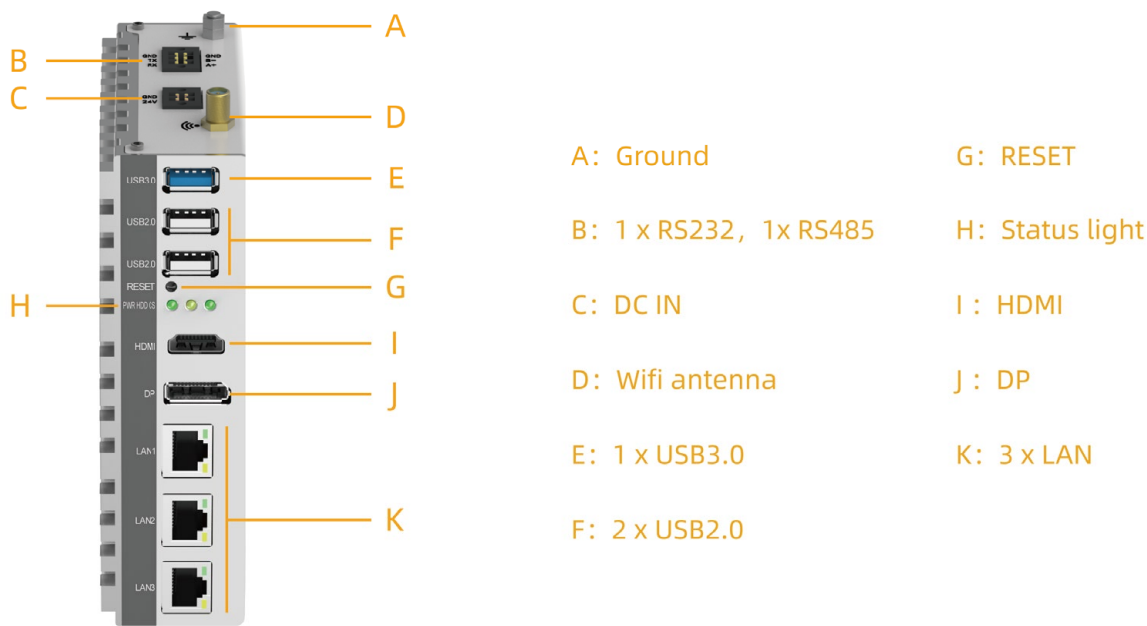
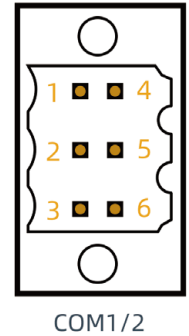


Figure 2-6-1

2.6.1 COM Port

PC60XX series expands 2-way serial ports, configured as 1xRS232 3pin Phoenix socket serial port and 1xRS485 3pin Phoenix socket serial port. The factory default functions of the serial port are 1xRS232 and 1xRS485; the serial port cannot be changed.

COM1 interface pin definition	
Pin	Signal
Pin1	GND
Pin2	TXD1
Pin3	RXD1
Pin4	GND
Pin5	RS485-
Pin6	RS485+

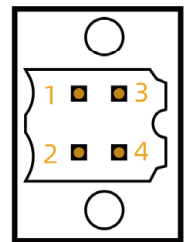


*Pin1-Pin3: COM1 supports RS232, Pin4-Pin6: COM2 supports RS485。

2.6.2 Power Ports

PC60XX Series offers a wide pressure (9~36V) input via 1 x 4 pin terminal:

DC IN interface pin definition	
Pin	Signal
Pin1	GND
Pin2	DC_IN
Pin3	ON
Pin4	P-S



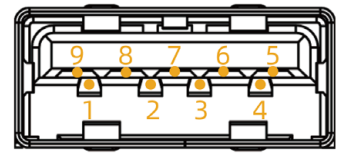
DC power input port

2.6.3 USB3.0 TypeA Interface

PC60XX series provides a standard USB3.0 TypeA interface.

Pin Assignment Introduction

USB3.0 TypeA interface pin definition		
Pin	Signal	Description
Pin1	VBUS	Power Supply
Pin2	D-	2.0 Data difference pairs, Data-
Pin3	D+	2.0 Data difference pairs, Data+
Pin4	GND	Power ground, GND
Pin5	StdA_SSRX-	High speed data differential pair, RX-
Pin6	StdA_SSRX+	High-speed data differential pair, RX+
Pin7	GND_DRAIN	Signal Ground
Pin8	StdA_SSTX-	Height data difference pair, TX-
Pin9	StdA_SSTX+	Height data difference pair, TX+



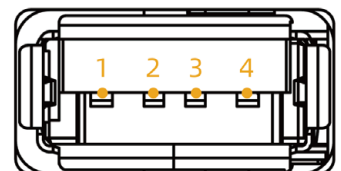
USB3.0 TypeA

2.6.4 USB2.0 TypeA Interface

PC60XX series provides 2 standard USB2.0 TypeA interfaces and can use 2 USB interfaces at the same time.

Pin Assignment Introduction

USB2.0 TypeA interface pin definition		
Pin	Signal	Description
Pin1	VCC5	Power supply +5V
Pin2	DATA-	Data -



USB2.0 TypeA

USB2.0 TypeA interface pin definition		
Pin	Signal	Description
Pin3	DATA+	Data +
Pin4	GND	Ground

2.6.5 HDMI Interface

PC60XX series products provide A standard HDMI Type A interface, Can be directly connected to this interface for video transmission

2.6.6 DP Interface

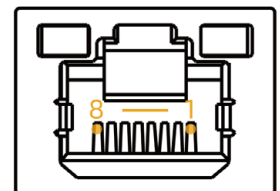
PC60XX series provide a standard DP interface that can be directly connected to for video transmission.

2.6.7 Ethernet interface

PC60XX series offers three RJ45 Ethernet ports, with surge protection.

Pin Assignment Introduction

Ethernet interface pin definition	
Pin	Signal
Pin1	TX0+
Pin2	TX0-
Pin3	TX1+
Pin4	TX1-
Pin5	TX2+
Pin6	TX2-
Pin7	TX3+
Pin8	TX3-



RJ45 Ethernet Interface

2.7 Status indicator description

Figure 2-7-1 shows the position of PC60XX series status indicators:



Figure 2-7-1

Name	Color	Description
PWR	Green	Power light
HDD	Yellow	Hard disk operating status indicator light
CS	Green	System running status indicator

2.8 Bios Interface setting

Main

Contains basic BIOS information.
Figure 2-8-1 shows the Main screen.



Figure 2-8-1

Fast

Contains settings for power-on auto-start.
Figure 2-8-2 & 2-8-3 show the Fast screen.

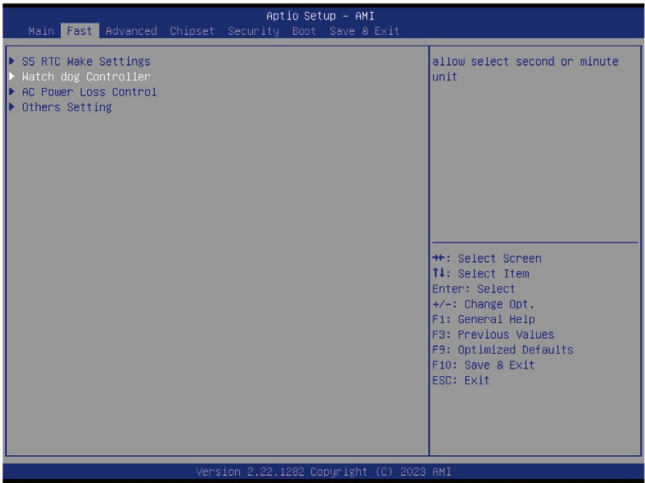


Figure 2-8-2

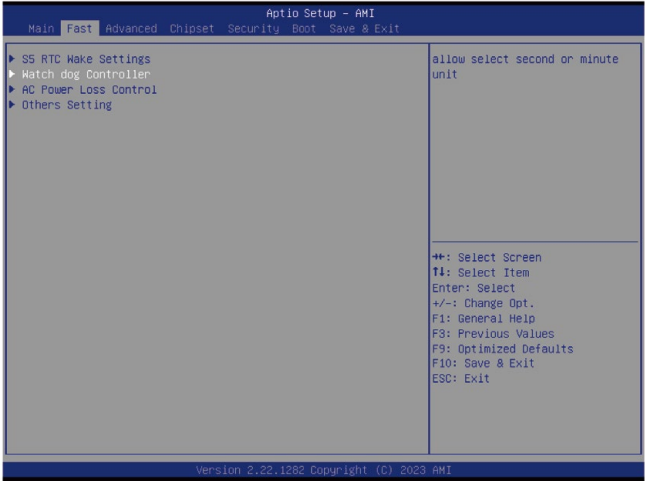


Figure 2-8-3

Advanced

Contains the advanced configuration items of the BIOS system.

Figure 2-8-4 shows the Advanced screen.

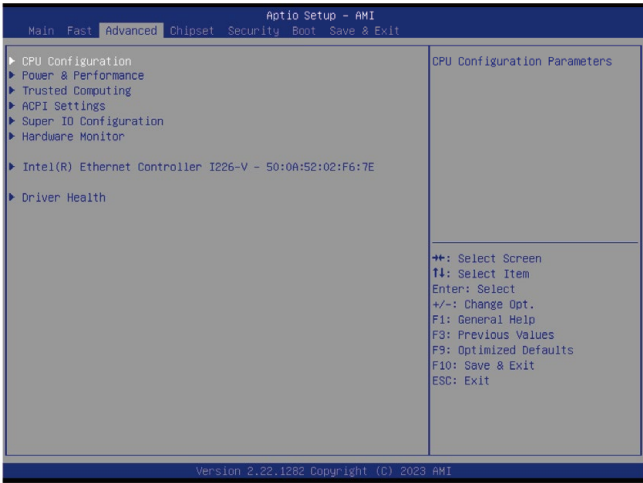


Figure 2-8-4

Chipset

Includes advanced chipset functionality Settings.

Figure 2-8-5 shows the Chipset interface.

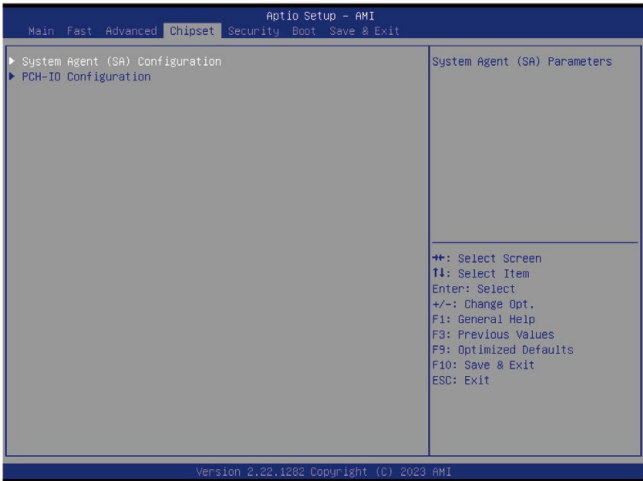


Figure 2-8-5

Security

Includes control over security functions.

Figure 2-8-6 shows the Security screen.

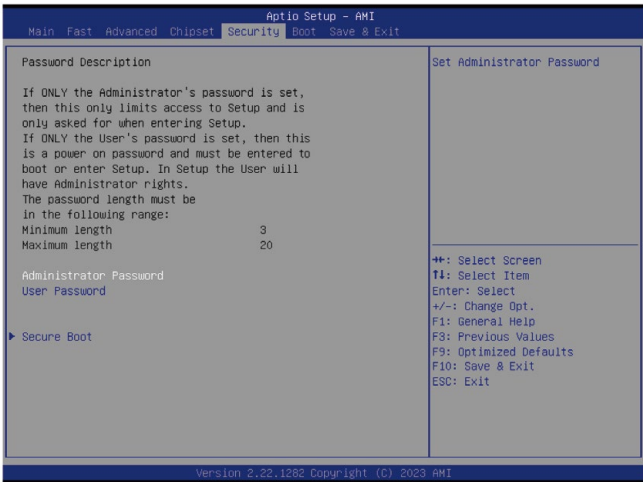


Figure 2-8-6

Boot

Set the boot mode, boot sequence, and boot process.

Figure 2-8-7 shows the Boot screen.



Figure 2-8-7

Save&Exit

The user can save BIOS parameter modification and exit BIOS Setup.

Figure 2-8-8 shows the Save&Exit screen.

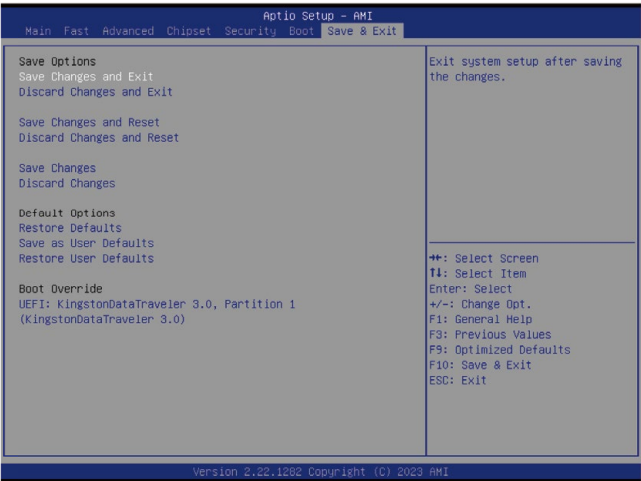


Figure 2-8-8

2.9 CPU temperature limit setting

① During startup, press F2 continuously to enter the BIOS interface, Figure 2-9-1.

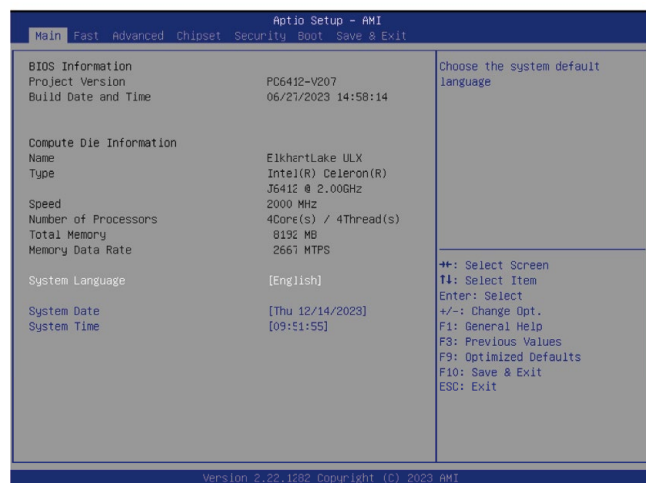


Figure 2-9-1

② Press CTRL + F1 to enter BIOS administrator mode. When the drop-down progress bar appears, it indicates success. Figure 2-9-2.

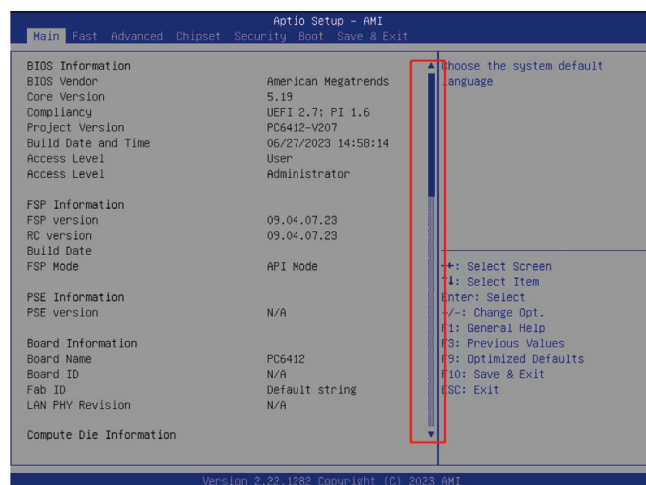


Figure 2-9-2

③ Select the Advanced menu item, press the ↓ key to select the Thermal Configuration item, and press the Enter key to enter. Figure 2-9-3.

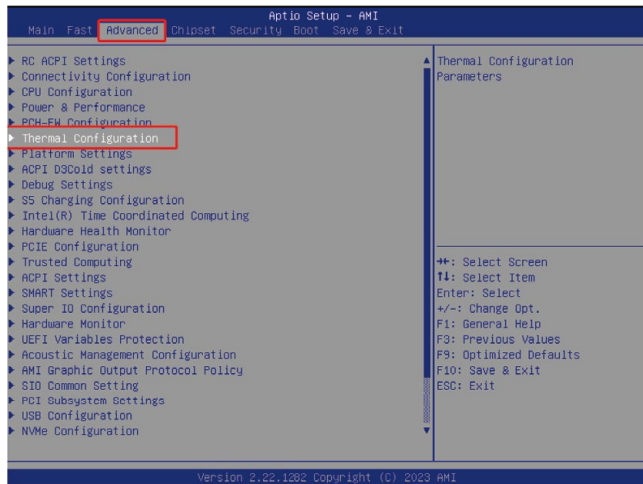


Figure 2-9-3

④ Press the ↓ key to select CPU Thermal Configuration and press Enter. Figure 2-9-4.

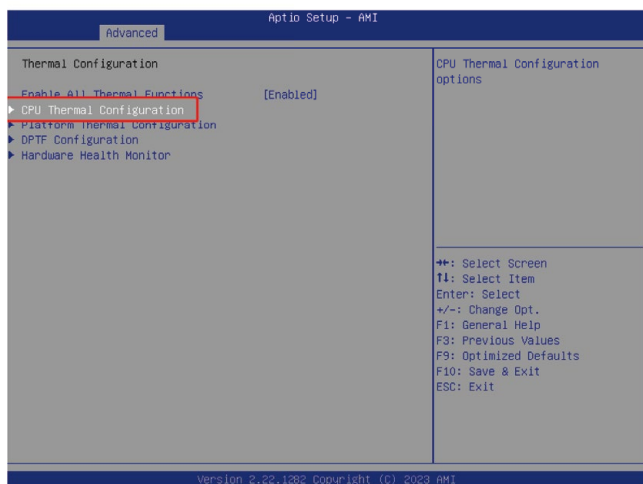


Figure 2-9-4

⑤ After entering, press the ↓ key to select Tcc Activation Offset, the default value is 20 (representing 100-20=80°), and the value is changed to 30 and the temperature limit is 70°. Keypad input numbers. Figure 2-9-5.

(Note: Please don't modify parameters at will. If you have questions, please contact our technical staff.)

Here, for example, the temperature limit is set to 70 degrees (Figure 2-9-6).

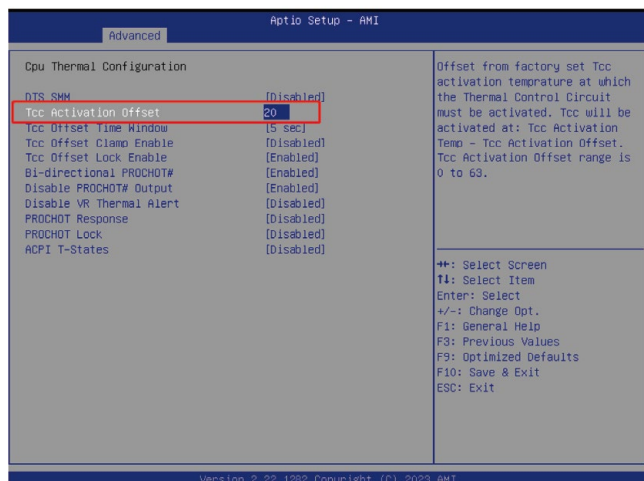


Figure 2-9-5

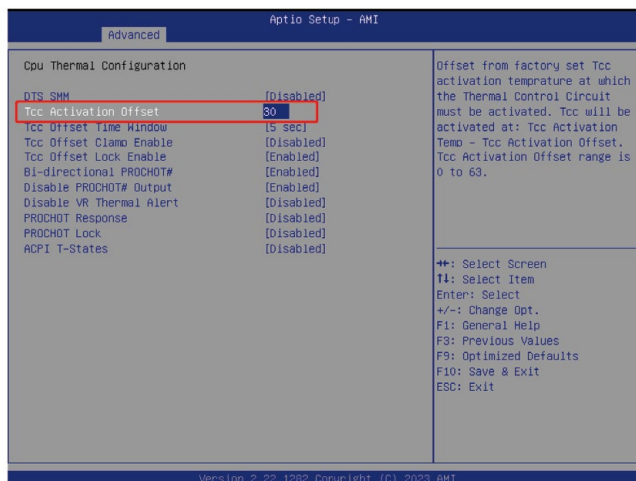


Figure 2-9-6

⑥ Press the ↓ key to select the Tcc Offset Time Window item, the default value is 5sec (Figure 2-9-7), and the value can be changed to 3sec. Press Enter to select this option. Figure 2-9-8.

(Note: Please don't modify parameters at will. If you have questions, please contact our technical staff.)

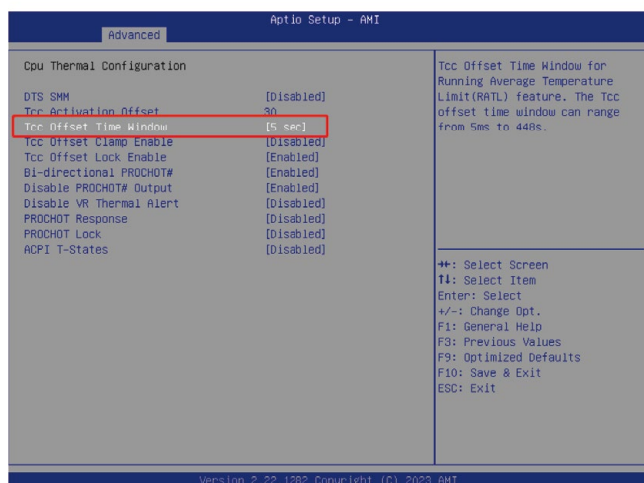


Figure 2-9-7

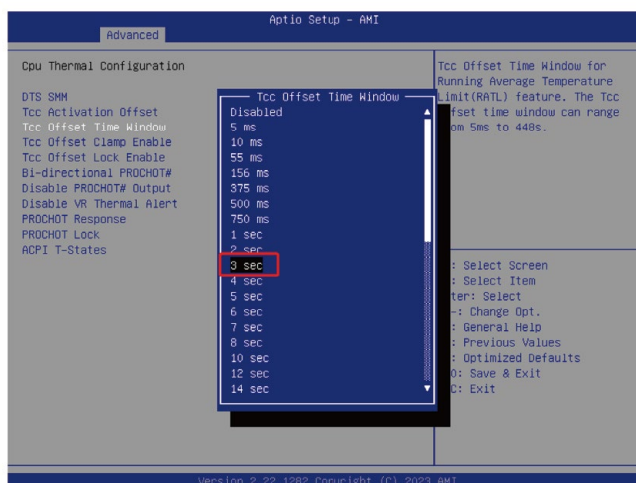


Figure 2-9-8

⑦ After the setting is completed, press F10 on the keyboard to pop up the Save&Exit Setup pop-up window. Use the ← or → key on the keyboard to select YES and press the Enter key to save the settings. Figure 2-9-9.

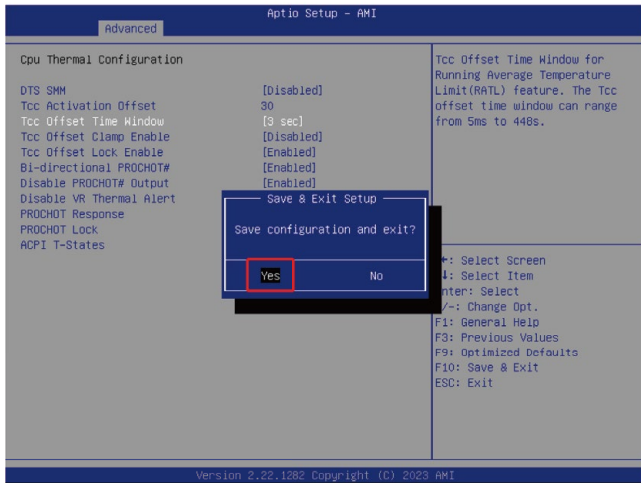


Figure 2-9-9

Chapter 3 Installation Instructions

Follow the following installation instructions when installing and using the network and software.

3.1 Product overview

This products are PC60XX series Fanless Box PC, following points should pay attention before installation:

- Do not work on live equipment. Power off the device before installation, troubleshooting, or maintenance. Protect the device from accidental opening.
- Comply with the relevant accident prevention regulations for your machine (e.g. BGVA3, electrical systems and equipment).
- Ensure that connections comply with standard to avoid risks to personnel. Ensure that data and power cables are layout in a standard manner and that pins are properly distributed.
- Follow the relevant EMC guidelines for your application.
- Avoid polarity reversal of data and power cables, which may damage the device.
- Devices, including electronic components, may be damaged by electrostatic discharge upon contact. Comply with DIN EN61340-5-1/-3 safety measures to prevent electrostatic emissions.
- The external ground cable must be installed, and the external ground cable is at least 4 mm² square.

3.1.1 Installation and Operation

Directly connect the product's power input, video interface, and network interface to the corresponding signal interface. The USB port is connected through the matching USB cable. The power input port is connected to a 9~36V DC power supply (note the positive and negative polarity). (Specific interface and definition can be seen in picture 2-6-1 of 2.6 Interface definition in Chapter 2)

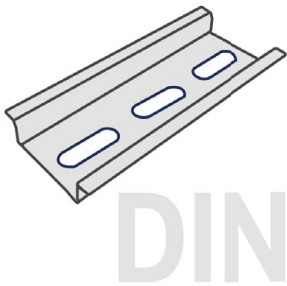
Installation instructions

- Ensure that the power supply is cut off before installation.
- Please try to avoid direct sunlight to extend the service life of the machine.
- Connect the device according to the device connection port and pay attention to the bending radius of the cable during installation to avoid a small radius.
- Ensure that the device is properly connected before switching on the power supply.

Install

Din rail installation

① Please fix the DIN rail in advance (DIN rail needs to be purchased and installed separately), and the product to be installed is also ready.



- ② Align the back of the device with the front of the DIN rail, ensuring that the DIN rail is placed in the space between the hook near the top of the DIN mounting and the spring lock near the bottom.
- ③ Place the bottom end of the device away from the rail and place the hook of the DIN mounting on the top of the DIN rail.
- ④ Slowly force the spring lock on the bottom of the DIN mounting unit downward in the direction of the DIN rail and snap into place.

Figure 3-1-1

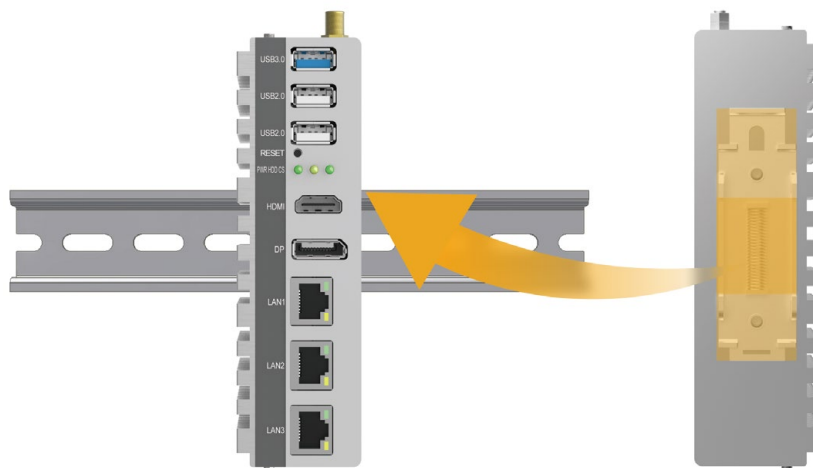


Figure 3-1-1

Matters needing attention

- Strictly follow the above steps to fixation the Box PC!
- All screws must be tightened to prevent the product from falling off!
- Avoid exposing the Box PC to sunlight directly!
- Avoid extreme environments and protect the control panel from dust, moisture and heat.

Grounding measure

The ground connection eliminates interference from external power cables, transverse cables, or external device cables. PE devices must be properly grounded during normal use. Loss of ground connection may result in failure.

3.2 Install RAM and SSD

- ① Please place the product horizontally first, cut off the power supply and unplug all interfaces.
- ② Remove four studs from the outside of the product (Figure 3-2-1), and gently remove the shell to see the internal circuit board structure.

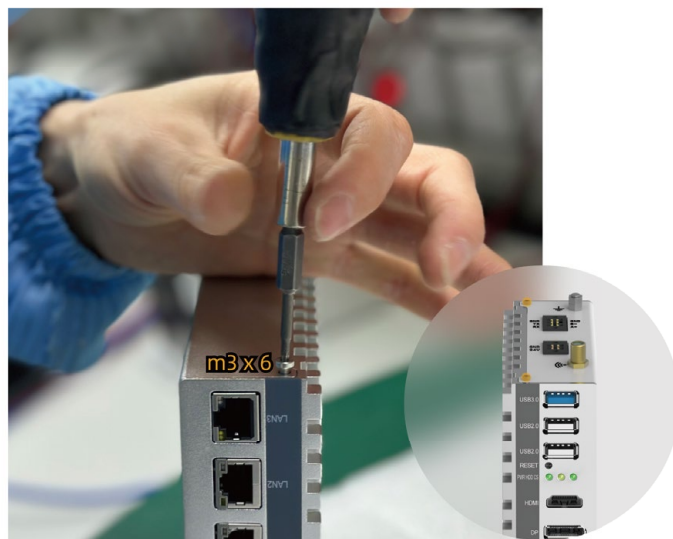


Figure 3-2-1

3.2.1 Install RAM

Remove: Bend the iron plates on both sides to remove the preinstalled RAM.

Install: Insert the RAM into the memory slot. Ensure that the RAM is aligned with the slot. Gently press down the RAM to ensure stable installation.

Figure 3-2-2.



Figure 3-2-2

3.2.2 Install SSD

Remove: Use a screwdriver to remove the screws from the SSD slot and carefully remove the SSD.

Installation: Insert the solid-state drive into the interface motherboard at an angle of 25° and align it with the screw port interface, then gently press down to ensure that it is inserted and fixed with screws. To prevent shaking and malfunction. Figure 3-2-3.

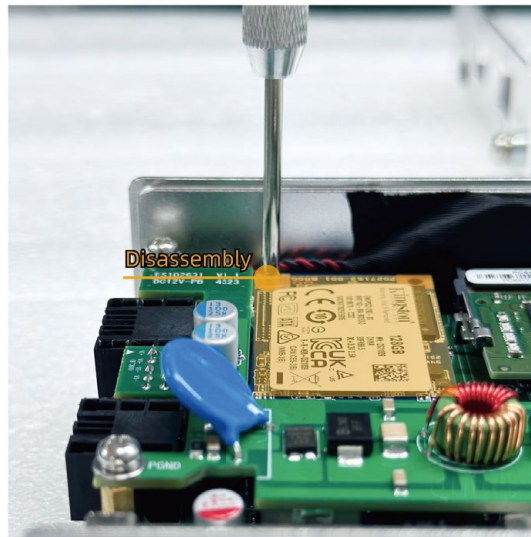


Figure 3-2-3

3.3 Install miniPCle

After the SSD is removed, there is a miniPCle card slot below it, which can be used to install 4G, Wifi, Bluetooth and other functional modules. Figure 3-3-4.



Figure 3-3-4

3.4 Transportation And Storage

Transport

Despite the robust design of this product, however these components are sensitive to strong vibrations and shocks. The display must be protected from excessive mechanical stress during transport and the original packaging should be used.

Storage

The Box PC needs to be stored in a dry environment in its original packaging at a temperature between -20°C and 60°C.

Package

Follow these steps as below and disassemble the device.

1. Remove the package.
2. Keep the original packaging for future relocation.
3. Compare with your order to check that the delivery goods are complete.
4. Keep relevant documents. It contains important information used to process the product.
5. Check the device if there is visible damage during the transportation.

* If you notice any shipping damage or inconsistencies between the goods with your order, please notify Shanghai Panelmate Electronics Co., Ltd. for after-sales service.

Chapter 4 Safety Prevention And Maintenance

4.1 Safety Precautions

Please follow the following safety precautions.

4.1.1 General Safety Precautions

- Always follow the electrostatic precautions outlined below when using the PC60XX series.
- Whenever it is necessary to install, move or modify PC60XX series products, ensure that the power supply is turned off and the power cord is disconnected.
- Do not apply voltage levels that exceed the specified voltage range. Failure to do so may result in fire or electric shock.
- When PC60XX series are in operation, once the inside of the product is opened, an electric shock may occur.

- Do not drop or insert any object into the air vent of the PC60XX series.
- Once a large amount of dust, water or liquid enters the product, the power should be turned off immediately, unplug the power cord, and then contact Panelmate.
- The following activities are prohibited:
 - Do not drop the device onto hard ground.
 - Do not knock the product or exert excessive force on it.
 - Do not use PC60XX series products in places where the ambient temperature exceeds the rated temperature.

4.1.2 ESD Preventive Measures

Warning:

Failure to take ESD precautions during installation of the IPC2XXXX series products may result in permanent damage to the products and serious injury to users.

Electrostatic discharge (ESD) may cause serious damage to the electrical components of this product. Dry climates are more likely to produce ESD. Therefore, once this product is opened and any electrical parts need to be handled, the following anti-static precautions must be strictly followed:

- Wear an ESD wrist strap: Wear a simple ESD wrist strap to prevent ESD damage to electrical components.
- Self-grounding: Any grounding conductive material should be touched before handling any electrical parts. During handling of electrical parts, any conductive substance that is grounded should always be touched.
- Use an ESD mat: When you configure electrical components or perform related operations, place them on an ESD mat. This reduces the possibility of ESD damage.
- Only touch the edge of the electrical parts: In the case of handling electrical parts, hold the electrical parts by holding the edge.

4.1.3 The scope of the product is not applicable

The product is not suitable for operation in the following areas:

- areas with aggressive environments, e.g. aggressive gases or chemicals

4.2 Maintenance and Cleaning

Please maintain and clean the product as follows.

4.2.1 Maintenance and Cleaning

Please read the following details before cleaning any parts or components of the product. Do not spray or spray the liquid directly on any other parts.

- No need to clean the inside to avoid liquids from getting inside.
- Be careful not to damage the internal small , removable parts.
- Please turn off the power before cleaning.
- Do not drop any object or allow any liquid to enter the product through the opening.
- When cleaning, be careful of any allergic reactions your body may have to solvents or chemicals.
- Avoid eating, drinking and smoking near work areas.

4.2.2 Cleaning Tool

Only specially designed products can be used to clean certain parts. In such cases, such products are clearly noted in the cleaning instructions. Here is a list of items that can be used for cleaning:

- Cloth - Although paper towels or tissue paper can be used, soft, clean cloths are recommended.
- Water or external alcohol - Cloths with water or external alcohol should be used.
- Use solvents - It is recommended not to use solvents as they may cause damage to plastic parts.
- Vacuum cleaners - Using vacuum cleaners designed for computers is one of the best cleaning methods. Dust and dirt can restrict airflow and cause corrosion of the circuit.
- Cotton swabs with external alcohol or water are an excellent tool for wiping hard-to-reach product areas.
- Foam swabs - If possible, it is best to use foam swabs and other non-lint labels for cleaning.

Chapter 5 FAQ

5.1 Technical Support And Service

Please visit the official website of Shanghai Yiyao Electronics www.panelmate.cn and wechat official account “亿耀电子” to download the documents and related driver software, or contact the company directly for support and service.

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