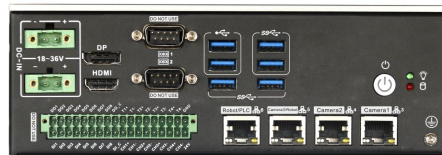


Please read the instructions in detail before using the product

Q6AMV-B-1A1 (MK) User's Guide

Verion: v1.0



Update Table

Version	Changelist	Author	Date
<i>V1.0</i>	<i>First Version</i>	<i>WURUI</i>	<i>2022/11/22</i>
Reviewer: Peng Yincan			

contents

1 Attention	4
2 Preface	5
2.1 Product Features	5
2.2 Table of specifications	6
3 Product view	7
3.1 Product pictures	7
4 Interface Introduce	9
4.1 Function indication diagram of chassis interface	9
4.2 Pin Definition	10
5 Installation method	14
6 Power Supply	15
6.1 pictures	15
6.2 Table of specifications	15
7 BIOS Setup	16
7.1 Date and time settings	16
7.2 Settings Common function settings	17
7.3 Other function settings	23

1 Attention

Brand

Product name and brand mentioned in this user's guide are the property of the company.

Notices:

1. Please read the instructions in detail before using the motherboard to avoid damaging the motherboard by wrong operation.
2. Please store or use the product in the environment of $-10^{\circ}\text{C} \leq \text{Work Station} \leq +50^{\circ}\text{C}$, 95%RH, to avoid damaging the product for too hot or cold.
3. Please do not do strongly mechanical shake, and do not operate the product before ESD protection.
4. Please disconnect all power cables from the existing system before you add or remove a device.
5. Make sure your power supply is set to correct voltage, namely DC 18~36V
6. Forbid to repair, modify or alter the product by self. If it causes any damage, we don't take any responsibility.

2 Preface

2.1 Product Features

Thank you for choosing Q6AMV-B-1A1 computer !

This product is a computer for industrial control system. It is based on Intel's Alder Lake platform, and use the QH610 chipset. It can support the 12th & 13th generation of Intel Core \Pentium\Celeron Desktop CPU. MKMD-Q6AMV-B-1A supports Win10, Win11 and Linux (kernel version 5.10 or above).The dimensions of the computer is 200mm (length) ×164mm (width) ×69mm (height) .

The chassis of this product is composed of aluminum alloy heatsink parts and the metal sheet part. The aluminum alloy heatsink part is sandblasted on the surface and anodized with Iron grey matte. The metal sheet part is made of SGCC with a thickness of T=1.5mm, and the surface is painted black.

This product is based on Intel 12th generation high performance processor, and equipped with rich IO interface. This product is simple in appearance, firm in structure and stable in function. It is a industrial PC product for machine vision , and industrial automation applications.

2.2 Table of specifications

Main features	
Processor	Intel 12 th /13 th Core i3/i5/i7 or Pentium/ Celeron processor of LGA1700 Socket (TDP 65W ^①)
Chipset	H610
Memory	2×DDR4 260-PinSODIMM , Up to 64GB 3200MT/s
Storage	1×M.2 2280 M-Key(supports SATA3.0) 1×SATA3.0 2.5 inch HDD Bay
Network	4×RJ45 Gigabit Ethernet Interfaces (Ethernet Controller: Intel I211AT)
Extension features	
IO interface	1×DP1.4a Display Port (Max Resolution : 7680x4320@60Hz)
	1×HDMI 2.0b Display Port (Max Resolution : 4096x2160@60Hz)
	4×RJ45 Gigabit Ethernet Interface
	4×USB3.0 Ports & 2×USB2.0 Ports
	2×RS232 Serial Ports (COM1&2 supports RS232/485/422 selections)
	1×Multiple IO Connector (8×DI & 8×DO & 4×Channel Light source with external triggers)
	3×Reserved antenna holes
Extension Slots	1×M.2 3042/52 B-Key for 4G module extension
	1×M.2 2230 E-Key for WIFI & Bluetooth Module extension
System features	
O.S	Win10/Win11/Linux/Unix
Power Supply	18~36V DC Input ^②
	5.08-2×2 Pin Terminals Connector
Mechanical features	
Materials	Aluminium Alloy & SGCC
Dimensions	200mm (L) ×164mm (W) ×69mm (H)
Installation	Wall mount
Operating environment	
Temperature	Operating temperature : -20℃~+50℃
	Storage temperature : -40℃~+85℃
Relative humidity	Power Off: 95% , does not condense at 25 to 30 temperatures

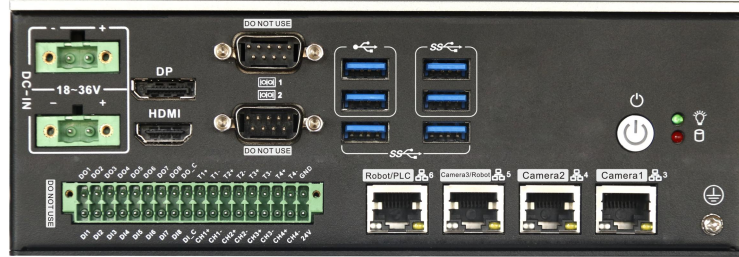
Notice :

①This product supports Intel Core12/13th LGA1700 package and processors with TDP no higher than 65W;

②To use 24V light source output, the host should use 24V power input;

3 Product view

3.1 Product pictures



IO in the back

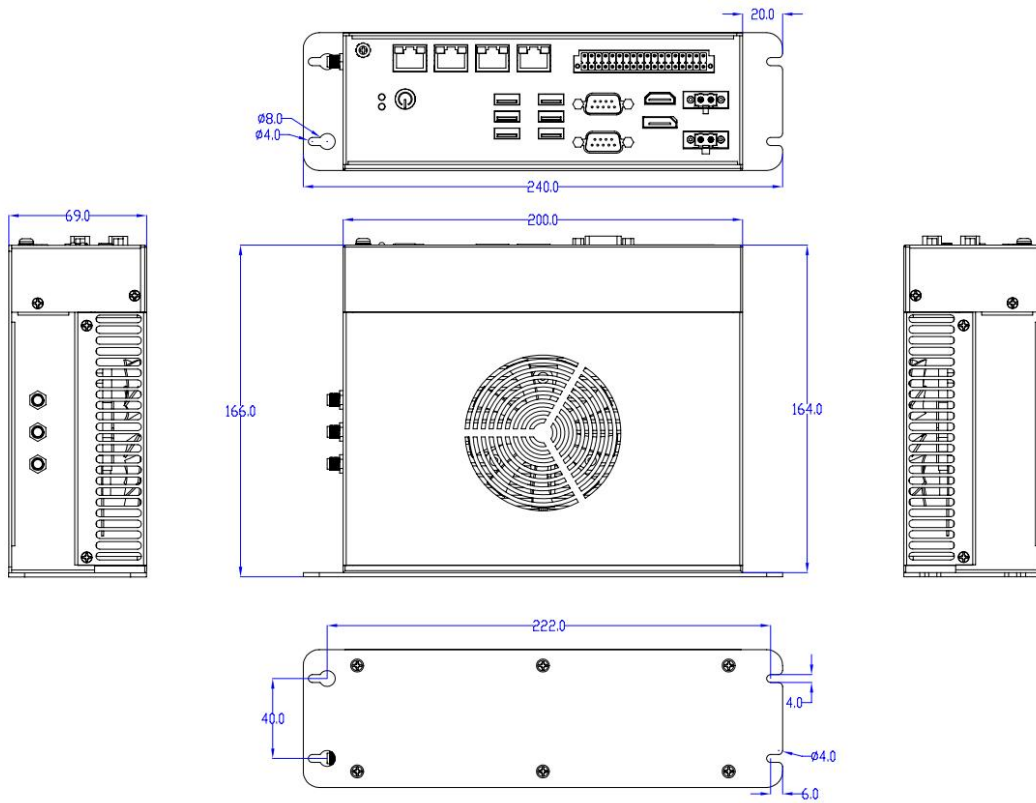


IO on the side



vertical view

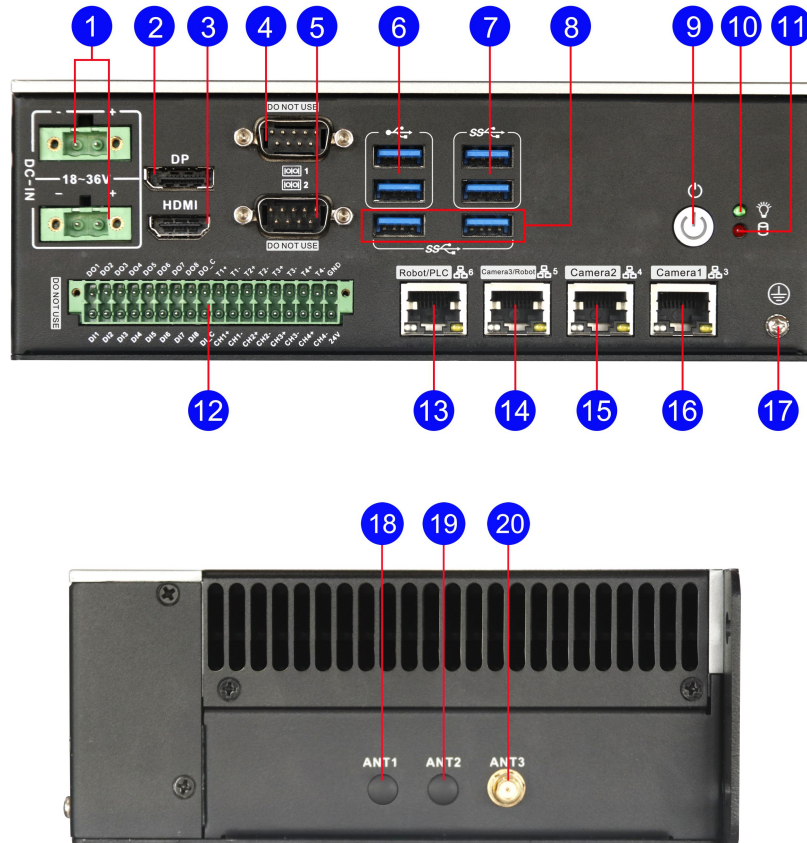
3.2 Physical dimensions



Notice: The dimensions in the drawing are uniform in millimeters (mm) .

4 Interface Introduce

4.1 Function indication diagram of chassis interface



Interface Description:

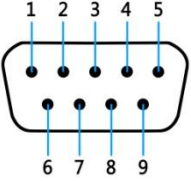
- | | |
|---|---|
| ① 5.08-2×2pin DC-IN Terminals | ② DP Display Port |
| ③ HDMI 2.0b display Port | ④ DB9 Serial Port 1 |
| ⑤ DB9 Serial Port 2 | ⑥ USB2.0 Type-A Port |
| ⑦ USB3.0 Type-A Port | ⑧ USB3.0 Type-A Port |
| ⑨ Power button | ⑩ Power status indicator LED (green , on) |
| ⑪ HDD LED status indicator LED(red , Blink) | ⑫ DIO&Light source terminals |
| ⑬ RJ45 Gigabit Ethernet 4 | ⑭ RJ45 Gigabit Ethernet 3 |
| ⑮ RJ45 Gigabit Ethernet 2 | ⑯ RJ45 Gigabit Ethernet 1 |
| ⑰ Ground point (M4 stud) | ⑱ Reserved antenna hole 1 |
| ⑲ Reserved antenna hole 2 | ⑳ Reserved antenna hole 3 |

4.2 Pin Definition

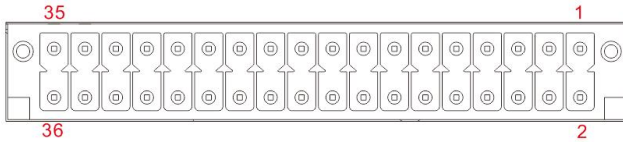
(1) COM1&2 Serial Ports

Notice: COM1、COM2 can select RS232/RS485/RS422 by Setting BIOS parameters. The Pin definitions are shown in the table below:

pin	Pin definitions		
	RS232	RS485	RS422
1	DCD	D-	TX-
2	SIN	D+	TX+
3	SOUT		RX+
4	DTR		RX-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		



(2) DIO&Light source terminals



pin#	Signal	description	pin#	Signal	description
1	GND	Ground	2	24V	External power input for light source channel
3	T4-	Negative trigger signal input of light source channel 4	4	CH4-	Negative pole of light source power supply channel 4
5	T4+	Positive trigger signal input of light source channel 4	6	CH4+	Positive pole of light source power supply channel 4
7	T3-	Negative trigger signal input of light source channel 3	8	CH3-	Negative pole of light source power supply channel 3
9	T3+	Positive trigger signal input of light source channel 3	10	CH3+	Positive pole of light source power supply channel 3
11	T2-	Negative trigger signal input of light source channel 2	12	CH2-	Negative pole of light source power supply channel 2
13	T2+	Positive trigger signal input of light source channel 2	14	CH2+	Positive pole of light source power supply channel 2
15	T1-	Negative trigger signal input of light source channel 1	16	CH1-	Negative pole of light source power supply channel 1
17	T1+	Positive trigger signal input of light source channel 1	18	CH1+	Positive pole of light source power supply channel 1
19	DOC	Common pin of digital out port	20	DIC	Common pin of Digital input
21	DO8	Digital output port 8	22	DI8	Digital input port 1
23	DO7	Digital output port 7	24	DI7	Digital input port 1
25	DO6	Digital output port 6	26	DI6	Digital input port 1
27	DO5	Digital output port 5	28	DI5	Digital input port 1
29	DO4	Digital output port 4	30	DI4	Digital input port 1
31	DO3	Digital output port 3	32	DI3	Digital input port 1
33	DO2	Digital output port 2	34	DI2	Digital input port 1
35	DO1	Digital output port 1	36	DI1	Digital input port 1

Notice:

Function Item	Parameter Description
light source	1、 The light source channel adopts PWM mode to adjust the brightness. Each light source channel supports 24V/3A output, but there is a limitation that four channels can support 80W output, in total. 2、 Each light source channel can work with a independent external trigger signal input, and the trigger signal Voltage level is 5~12V.
DI	1、 The DI input supports NPN/PNP mode, and an external power supply is required 2、 Optical isolation voltage is DC 2500V 3、 DI input voltage range : 12~30V 4、 High level input shall be more than 12V, and low level input shall be less than 5V 5、 CI input common pin shall be connected to external high level
DO	1、 The DO output supports NPN mode , and an external power supply is required 2、 Optical isolation voltage is DC 2500V 3、 The maximum current of DO output is 300mA 4、 The leakage current is less than 0.1mA 5、 The CO pin needs to be grounded

(3) USB Port

Standard USB Type-A definition, omitted here.

(4) DP Port

Standard DP definition, omitted here.

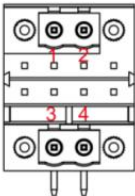
(5) HDMI Port

Standard HDMI definition, omitted here.

(6) Audio Port

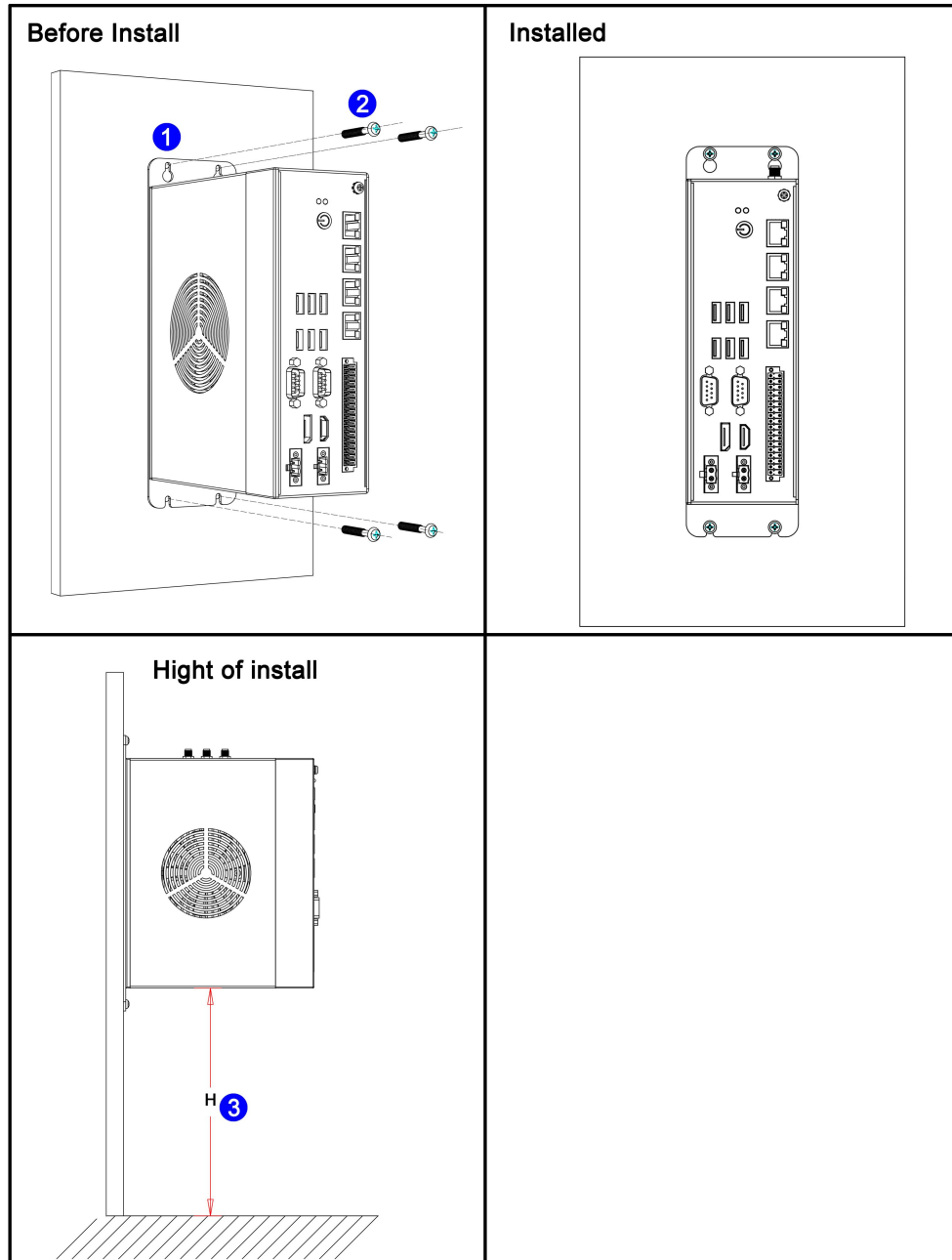
MIC-IN & LINE-OUT Use standard 3.5mm audio interface definition, omitted here.

(7) DC connector

JP/CN	pin#	Signal	
DC_IN	1	V-	
	2	V+	
	3	V-	
	4	V+	

5 Installation method

This host is wall mounted, please refer to the following figure for installation:



Notice :

- (1) Please ensure that the strength of the installation wall is enough to support the weight of the host;
- (2) Please select M3.5/M4 mounting bolts and ensure that the installation depth of 4 bolts is more than 35mm;
- (3) Please ensure that the installation height of the machine $H \leq 1\text{m}$;

6 Power Supply

6.1 pictures



6.2 Table of specifications

Specifications	
Input	100-240V~2.34A 50~60Hz
Output	24V~7.5A 180W

Notice:

- ① Ensure that the AC voltage source connected to the plug power meets the input parameters
- ② Ensure that the DC voltage output of the plug power matches the power input of the laptop
- ③ Using the power adapter, first connect the AC line to the adapter, then plug the green DC terminal of the power lead into the computer, and finally plug the power lead into electrical outlet and switch on at electrical outlet (if applicable in your locale)
- ④ Do not place the power adapter in an overheating environment to not reduce service life

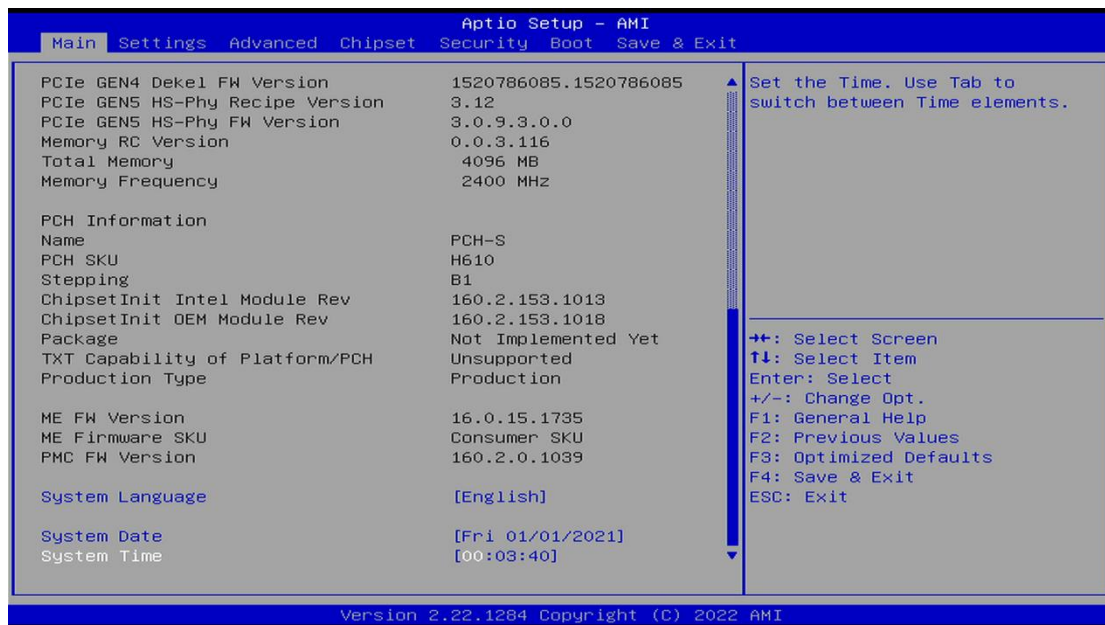
7 BIOS Setup

When starting up and running, press the <F2> key on the keyboard to enter the BIOS setup program.

After the setting is over, you need to press F10 or pass the save option in <Save & Exit> for the current setting to take effect.

7.1 Date and time settings

When you enter the BIOS setting interface, you can set the date and time in the first interface, as shown below:



Notice:

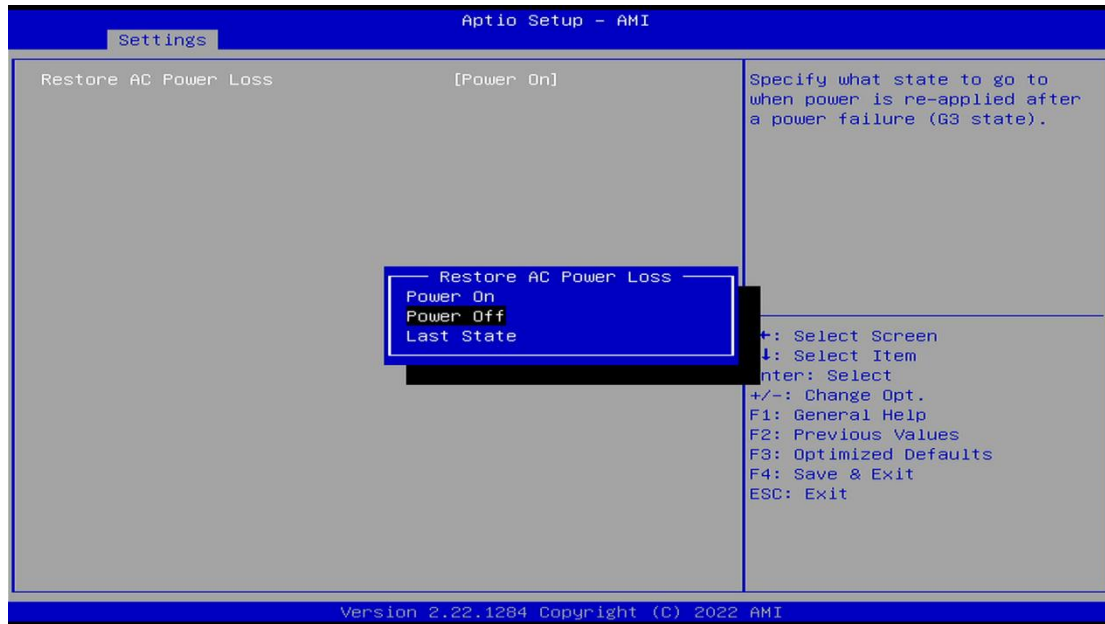
System Time : Set the time;

System Date : Set the date;

7.2 Settings Common function settings

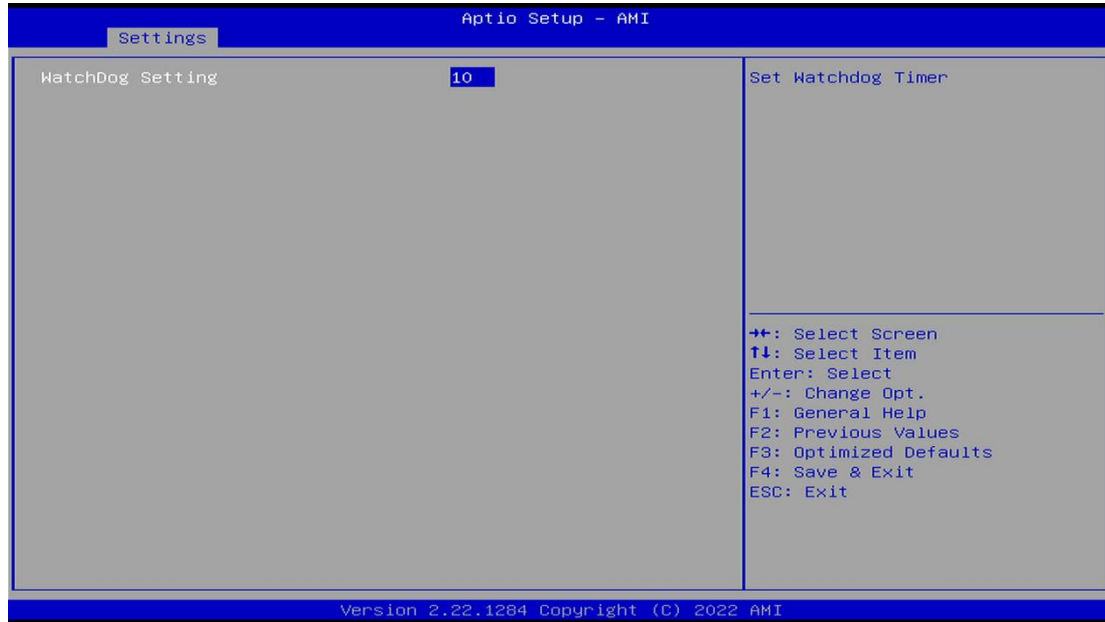
1.Incoming call power on setting

Enter the BIOS setting interface, select<Settings>→<AC Power Loss Setting>to set the options, select "Power ON" to start the power on function, and change it to "Power Off" to turn off the power on function.



2. Watchdog settings

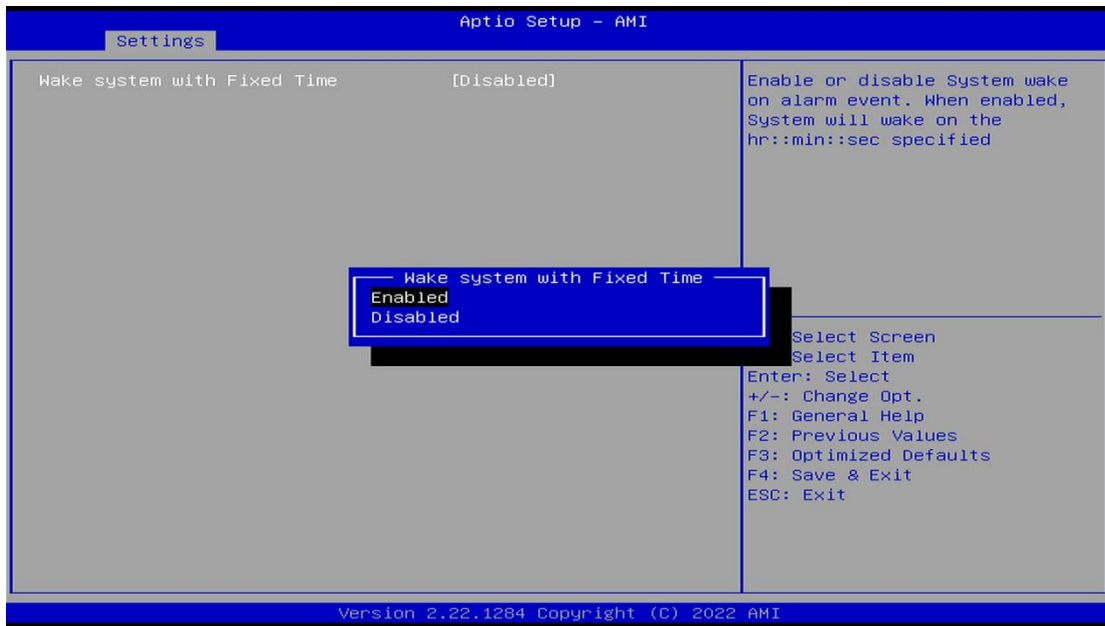
Enter the BIOS setting interface, select<Settings>→<Watchdog Setting>, and set the<Watchdog Setting>option according to your needs, as shown in the following figure:



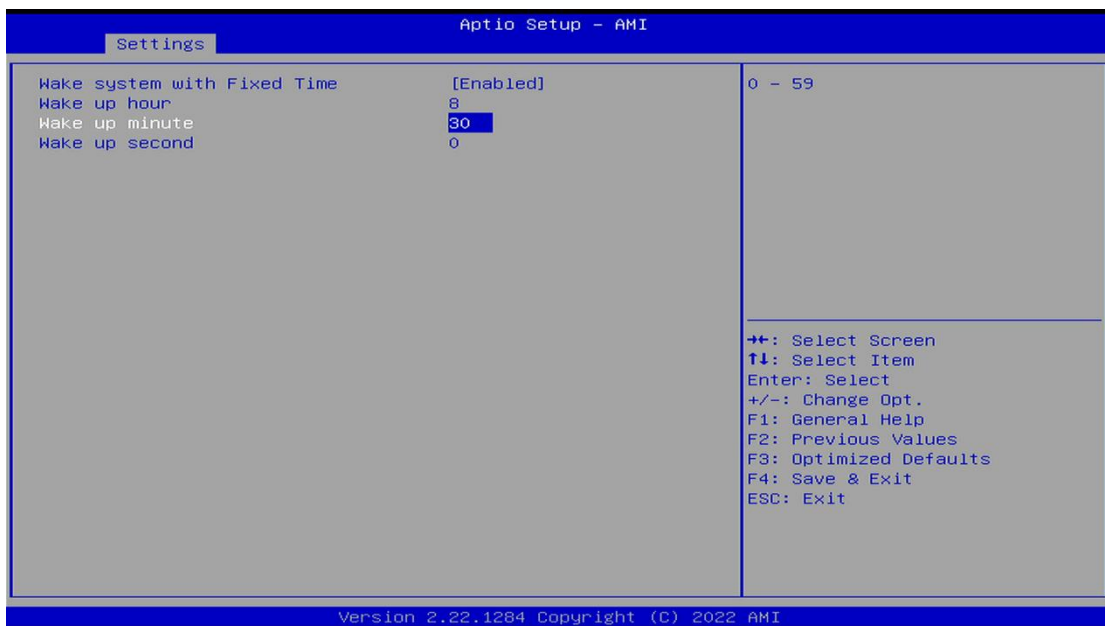
Notice: The input value is 0~255

3.power-on by alarm

Enter the BIOS setting interface, select the option<Settings>→<S5 RTC Wake Setting>→<Wake system with Fixed Time>, set the default value to "Enable", and then set the scheduled boot time according to your needs, as shown in the following figure:



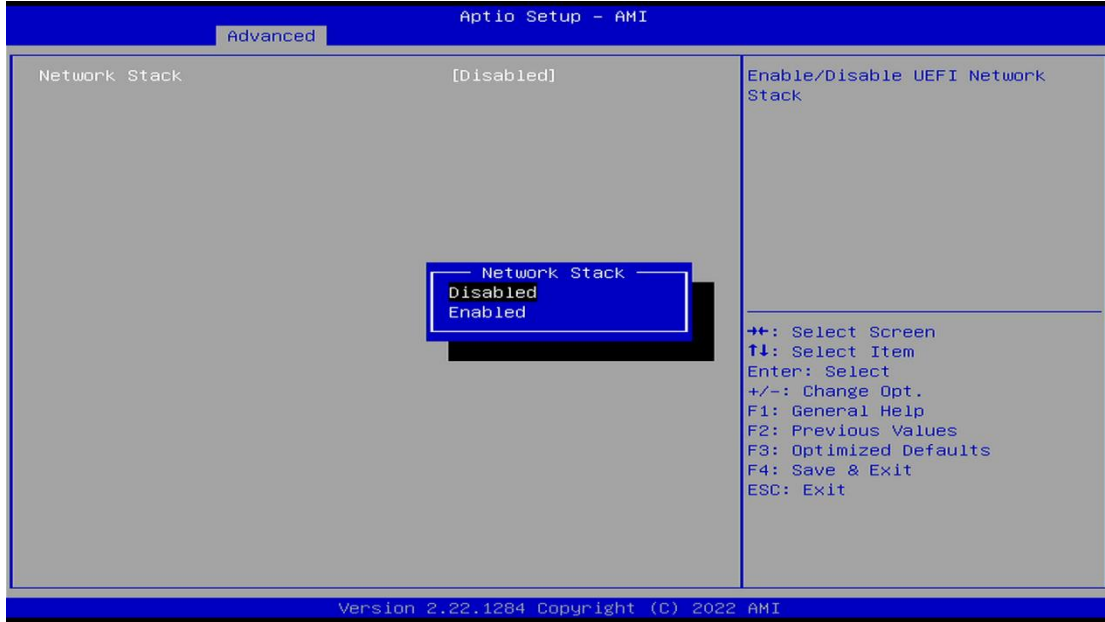
Set the hour/minute/second of startup respectively,such as 8:30:00



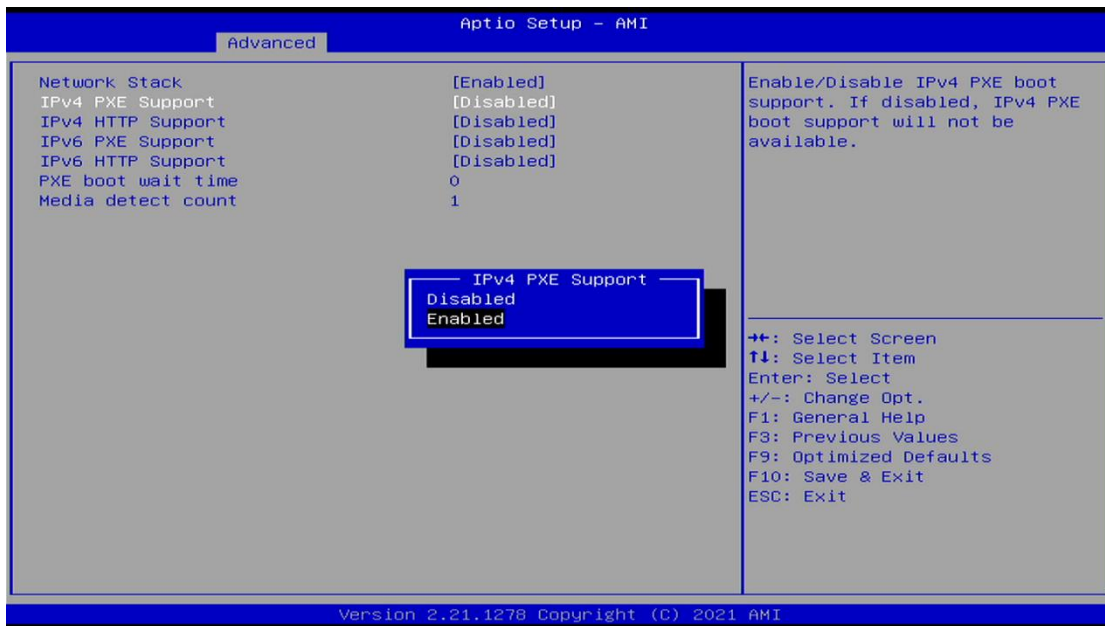
Notice: After setting "OK", it means that the motherboard will start automatically at this time of day

4.PXE startup function

Enter the BIOS setting interface, select the<Advanced>→<Network Stack>option, and change the default value to "Enabled", as shown below:

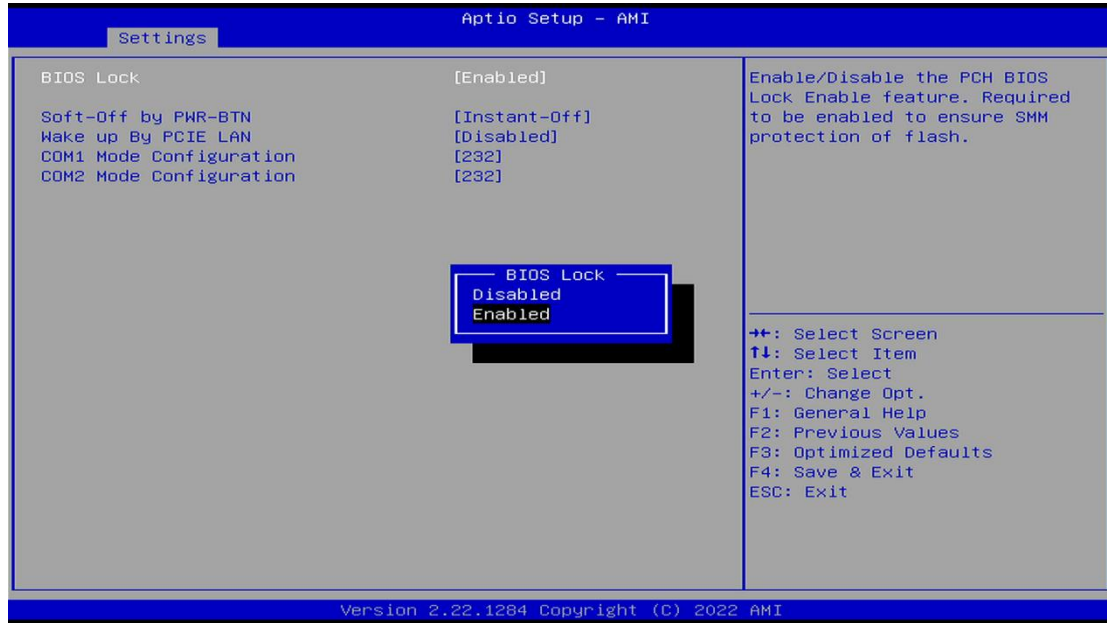


Then open IPv4 PXE Support to enable the corresponding PXE function, which takes effect after restart.



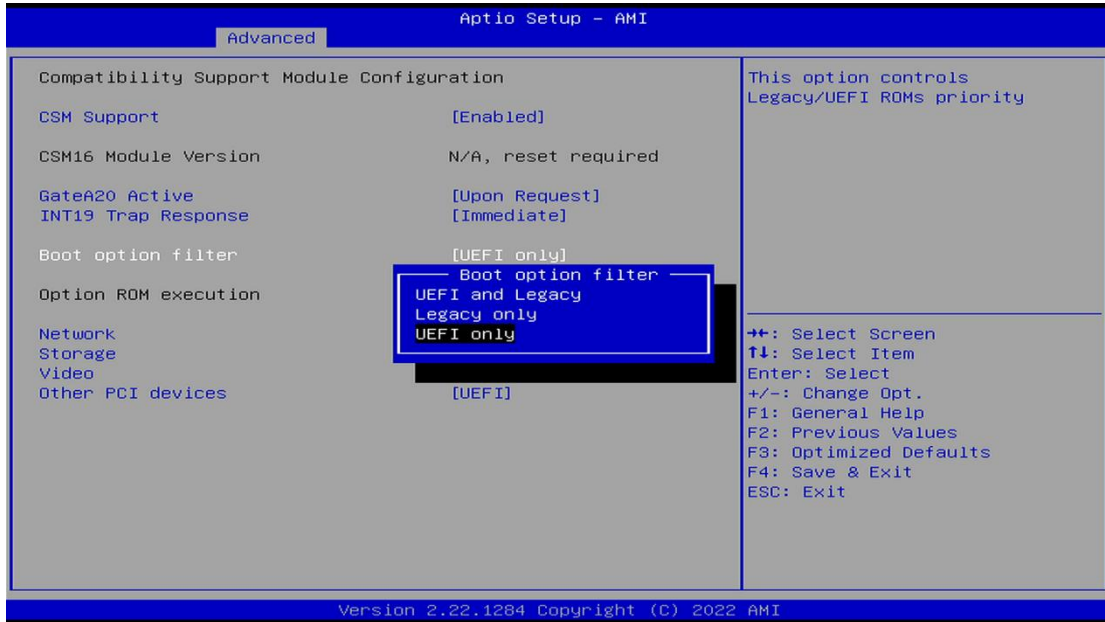
5. Disable the bios write protection function by bios flushing

Before updating the bios, you need to turn off the bios write protection function option to execute it, specifically: Enter the BIOS setting interface, select the <Settings> → <Special Setting> → <BIOS Lock> option, and set this option to "Disable", as shown below:



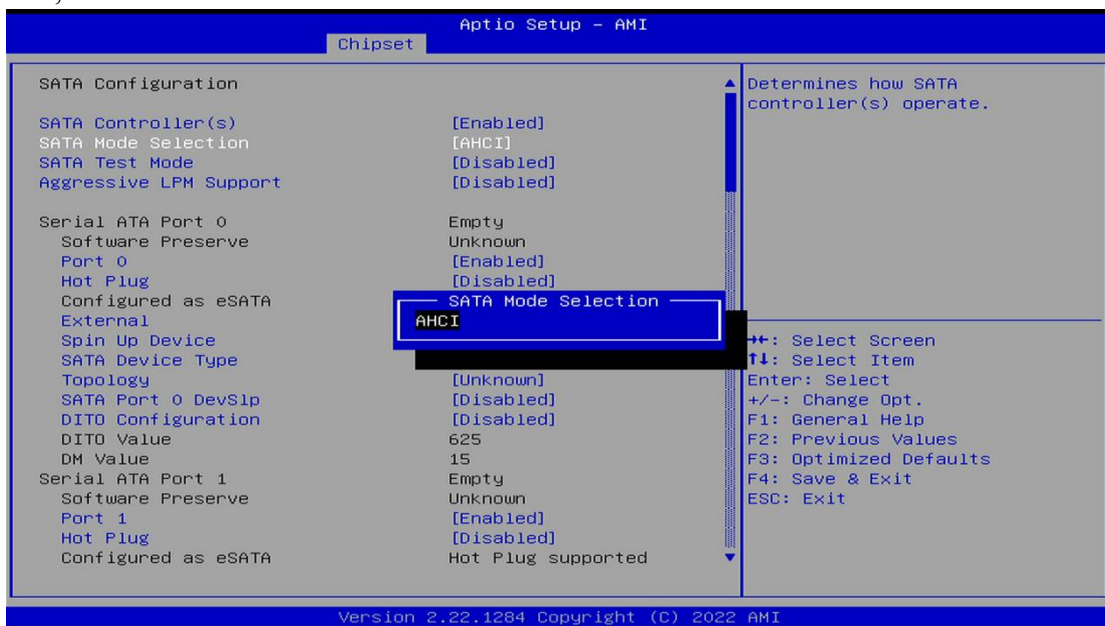
6.UEFI/Legacy startup mode selection

Enter the BIOS setting interface, select the option<Advanced>→<Special Setting>→<Boot option filter>, and select the settings in the pop-up box, as shown below:



7.SATA HDD mode selection

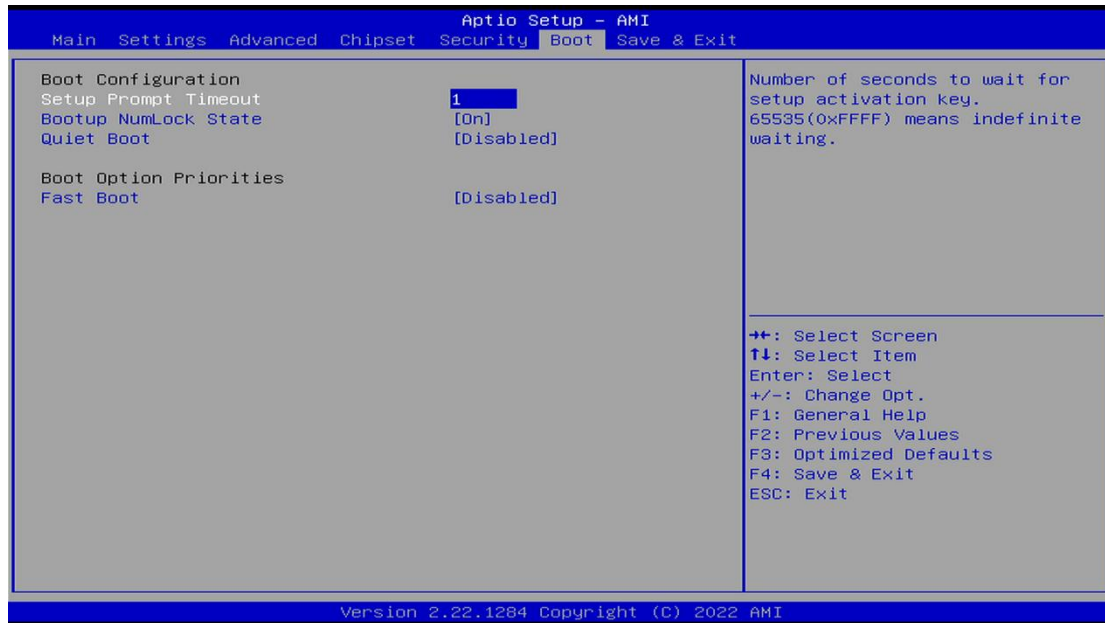
Enter the BIOS setting interface, select the<Chipset>→<SATA Configuration>→<SATA Mode Selection>option, and select the settings in the pop-up box, as shown below:



7.3 Other function settings

1.Boot setting function

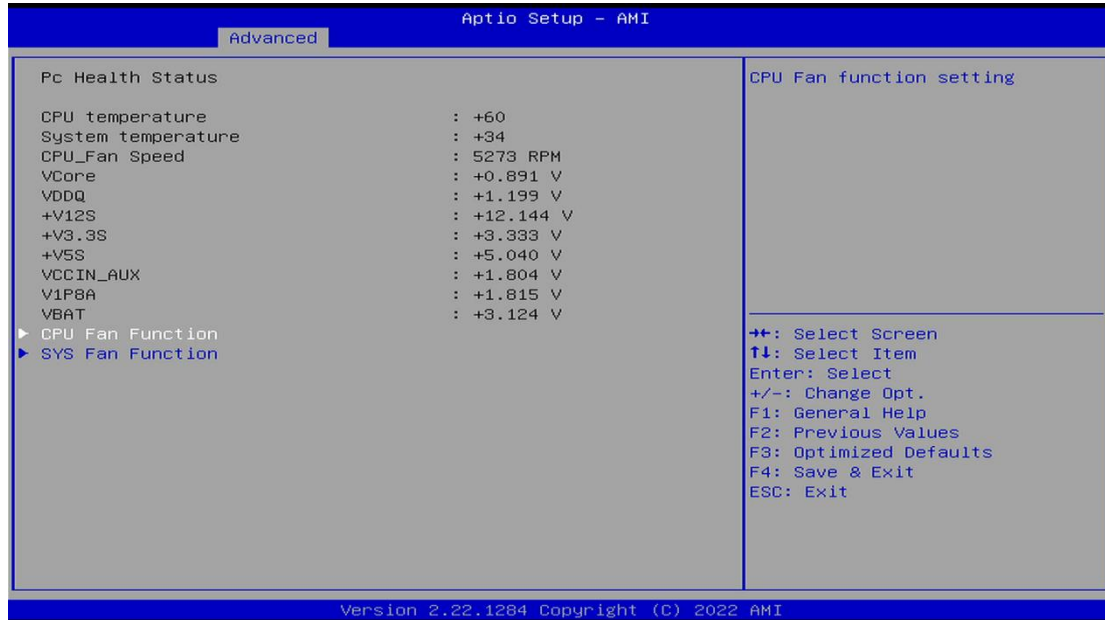
Enter the BIOS setting interface, select the<boot>option, and then set the required startup sequence, as shown below



Notice:The subsequent options can be set in turn to set the starting priority order.

2. Temperature, voltage and FAN speed detection

Enter the BIOS setting interface, and press<Advanced>→<Hardware Monitor>to enter this interface, where you can view the relevant detection values, as shown below:



Notice:This bios displays the current CPU temperature.

CPU_FAN Function: Select "Enable" to enable CPU_ Intelligent speed regulation function of FAN FAN power supply.

SYS_FAN Function: Select "Enable" to enable CPU_ Intelligent speed regulation function of FAN FAN power supply.

3.Password setting function

Enter the BIOS setting interface, select the<Security>option, and then set the superuser password and ordinary user password, as shown below:



4.Optimize. Save settings

Enter the BIOS setting interface, select the<Save&Exit>option to optimize. Save the settings, as shown below:



Save changes and Exit:	Save the current settings and exit the BIOS setting interface. The current settings take effect;
Discard changes and Exit:	Do not save the current settings, and exit the BIOS setting interface;
Save changes and Reset:	Save the current settings and restart the computer, and the current settings will take effect;
Discard changes and Reset :	Do not save the current settings, and restart the computer;
Save changes:	Save the current settings without exiting the BIOS setting interface;
Discard changes:	Discard the current settings and go back to the settings before the change operation;
Restore Defaults:	Load the factory default settings as the current settings, which will take effect after saving and exiting;
Save as User Defaults:	The current settings are saved as user default settings;
Restore User Defaults:	Load the user default value as the current setting, which needs to be saved to take effect.

Appendix: Introduction to related shortcut key functions

1. Press F2 to enter BIOS when starting up;
2. Press F12 when starting up to call up the device boot menu;
3. After entering the bios interface, the shortcut key F9 is equivalent to initializing the BIOS setting value;
4. After entering the bios interface, F10 saves the settings and restarts;