USER MANUAL

E511C- Q670 Series

Compact Industrial PC

Technical Support and Service

If user need technical support, please contact the local distributor or seller. Before consulting, please collect the following information:

- Product name and serial number
- Collect all information about the problem encountered
- Software used (operating system, version, application software, etc.)
- A complete description of the problem with the product
- Full content of each error message

Safety Measures - Static Electricity Protection

Please follow the following simple precautions before using the equipment to protect yourself and your products from harm:

- Before using the computer, be sure to disconnect the power supply to avoid the risk of electric shock. Do not touch the CPU or any components on the board while the computer is turned on.

- Disconnect the power supply before making any hardware configuration changes. A sudden electric shock while connecting a jumper or installing the board/card can damage sensitive electronic components.

Safety Tips

1) Please read this safety instruction carefully;

2) Please keep this user manual for future reference;

3) Remove the power cable before cleaning the device with a damp cloth. Do not use liquid cleaning agent to clean the PC;

4) Do not use the PC in a humid environment;

5) Before installation, ensure that the device is placed on a horizontal plane. An accidental fall may cause damage to the device;

6) The computer case is used for convection heat dissipation, in order to prevent the equipment from overheating, please do not cover any objects;

7) Before you power on the equipment, please confirm whether the power supply voltage meets the requirements;

8) Please arrange the power cord in a position that is not easy for people to trip, and do not pile any debris on the power cord;

9) Pay attention to all warning signs on the device;

10) If you do not use the equipment for a long time, please disconnect the power supply to avoid the computer being damaged by excessive voltage fluctuations;

11) Do not let any liquid flow into the power port or external interface to avoid short circuit and cause fire;

12) Please do not turn on the computer yourself. To ensure your safety, turn on the device by a certified engineer;

13) Do not place the device in an environment beyond the recommended temperature range;

otherwise, the device may be damaged.

14) The device is equipped with a real-time clock circuit powered by a battery. If the battery is not replaced correctly, there is a danger of explosion. Therefore, only batteries of the same type or equivalent model recommended by the manufacturer can be replaced. Please dispose of old batteries according to the manufacturer's instructions;

15) Note: Any unverified parts can cause accidental damage to the equipment. To ensure correct installation, please only use the parts provided in the accessory box, such as screws;

16) Note: Whenever you perform hardware operations, be sure to completely disconnect the chassis from the power supply. Do not connect the device while the power is on to avoid damage to sensitive electronic components by a transient surge. Please turn on the device by a professional.

17) In the following cases, please be repaired by a professional:

a. The power cord or plug is damaged;

b. There is liquid flowing into the device;

c. The device has been used in excessively humid environments;

d. Device does not work properly;

e. Damage caused by falling equipment;

f. The appearance of the device is damaged.

Using Tips

1) To avoid unnecessary damage to the device caused by frequent switching on and off in a short period of time, wait at least 30 seconds after shutdown before turning on the device.

2) Please use the power supply that meets the requirements or the adapter provided by the manufacturer. Otherwise, the startup exception, the image is not displayed, and unstable running may occur. Do not use the power supply exceeding the applicable voltage to supply power to the device. Otherwise, the device may be damaged.

Catalogue

1. Overview

This chapter mainly introduces the E511C-Q670 series products briefly, and gives a detailed list of machine parameters. For different series of products, the corresponding appearance size diagram and a simple description of the indicator light are given.

1.1 Introduction

E511C-Q670 series embedded industrial computer is a high-performance industrial computer integrating Vision and Control, which can meet the needs of various vision + motion application scenarios. Based on Intel® 12-14th-generation Core™ high-performance processors, the E511C-Q670 is a powerful multi-core processor that supports up to 64GB of DDR5 memory for fast response at all times.

E511C-Q670 series industrial computer has rich IO interfaces, provides 3 GbE LAN, 1 RS-232/422/485, 3 RS-232/485, 2 RS-232, 6 USB3.2, 2 USB2.0, meet the different application requirements.

1.2 Safety precautions

1. *Before performing any operation, remove the power cable from the chassis. Do not connect the chassis when the system power is on. A sudden surge of current may damage sensitive electronic components. Opening the chassis requires experienced personnel to operate.*

2. *Before touching the E511C-Q670, be sure to ground yourself to eliminate static electricity and wear an ESD bracelet. Modern electronic devices are very sensitive to electrostatic charges, so place all electronic components on an electrostatic dissipating surface or in an electrostatic shielding bag.*

1.3 Specifications

1.3.1 Processor System

Table 1-1	Processor System
CPU	12-14th Gen Intel® Core™ i3/ i5/ i7 series CPU
BIOS	AMI 128Mbit SPI Flash
Memory	2 x DDR5 SO-DIMM up to 64GB
Graphics	Intel UHD Graphics 770

1.3.2 External I/O

Table 1-2	External IO
DP	1 x DP1.4a up to 4096x2304@60Hz
HDMI	1 x HDMI2.0b up to 4096 x 2160@60 Hz
VGA	1 x VGA up to 1920 x 1200@60Hz
Ethernet	2 x Intel i210 GbE LAN, 1 x Intel i219 GbE LAN
Serial Port	1 RS-232/422/485, 3 RS-232/485, 2 RS-232
USB	6 x USB 3.2 (GEN2), 2 x USB 2.0
Remote	1 x Remote

1.3.3 Internal Connectors

Table 1-3	Internal Connectors
M.2 E-Key	1 x M.2 2230 support Wi-Fi (Support PCIe protocol)
M.2 B-Key	1 x M.2 3052 support 4G & 5G / 1 x M.2 2242 & 2280 support SATA3.0
M.2 M-Key	1 x M.2 2280 support SATA3.0
USB2.0 (Internal)	1 x USB 2.0 Type-A
SIM	1 x Nano SIM

1.3.4 Switch & LED Indicator

Table 1-4	Switch & LED Indicator
Power Button	1 x Power Button
Reset Button	1 x Reset Button
LED Indicator	4 (SATA, Memory, USER1, USER2)

1.3.5 Power

Table 1-5	Power
Power Input	DC 24V
Max Consumption	200W
Power Management	AT/ATX
Power Connector	1 x 3 PIN Phoenix terminal

1.3.6 Physical Characteristics

Table 1-6	Physical Characteristics
Dimension	220 x 226 x 75mm (L x W x H)
Weight	3.4kg
Installation	Wall-mounting

1.3.7 Environment

Table 1-7	Environment
Temperature	Operating Temperature: 0~50°C (32~122°F) Storage Temperature: -40~85°C (-40~185°F)
Humidity	Operating Humidity: 95% @ 40 °C (Non-condensing) Storage Humidity: 95% @ 60 °C (Non-condensing)

1.3.8 Others

Table 1-8	Others
Watchdog	65536 lever, 0~65535 sec
TPM	TPM 2.0 (Optional)

1.3.9 Certification

Table 1-9	Certification
EMC	CE, FCC

1.4 Packing List

When unpacking the box, check the accessories for obvious damage and confirm whether the random accessories are consistent. For details about accessories, see Table 1-11.

Table 1-10	Packing List
1	E511C-Q670 Series Industrial PC x1
2	Screw x4
3	Three plug power cord x1
4	Power adapter x1
5	Wall mounting kits x1

1.4.1 Appearance & Dimension

The dimension of E511C-Q670 is 220 x 226 x 75mm, Figure 1-1 shows the appearance and installation dimensions.

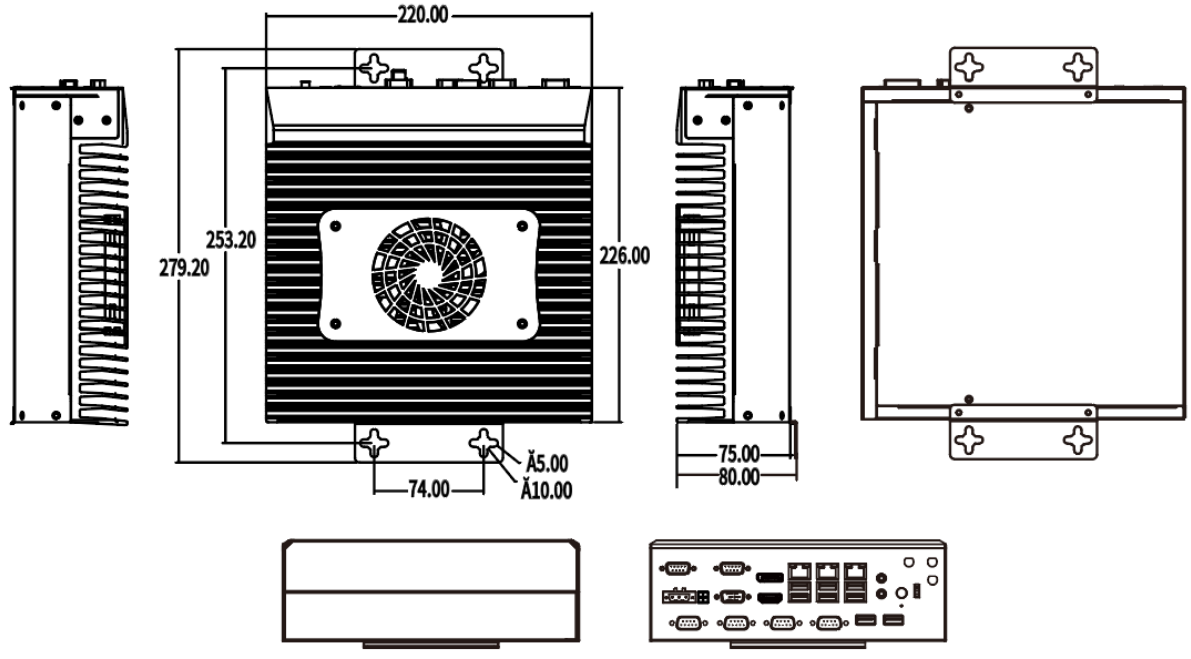


Figure 1-1 Dimension of the E511C-Q670

2. Interfaces Description

This chapter mainly introduces the interfaces of E511C-Q670 series industrial computers, and describes the pins of some of them in detail, which can provide a reference for the user's connection use.

External interfaces of the E511C-Q670 are shown in the following figure.

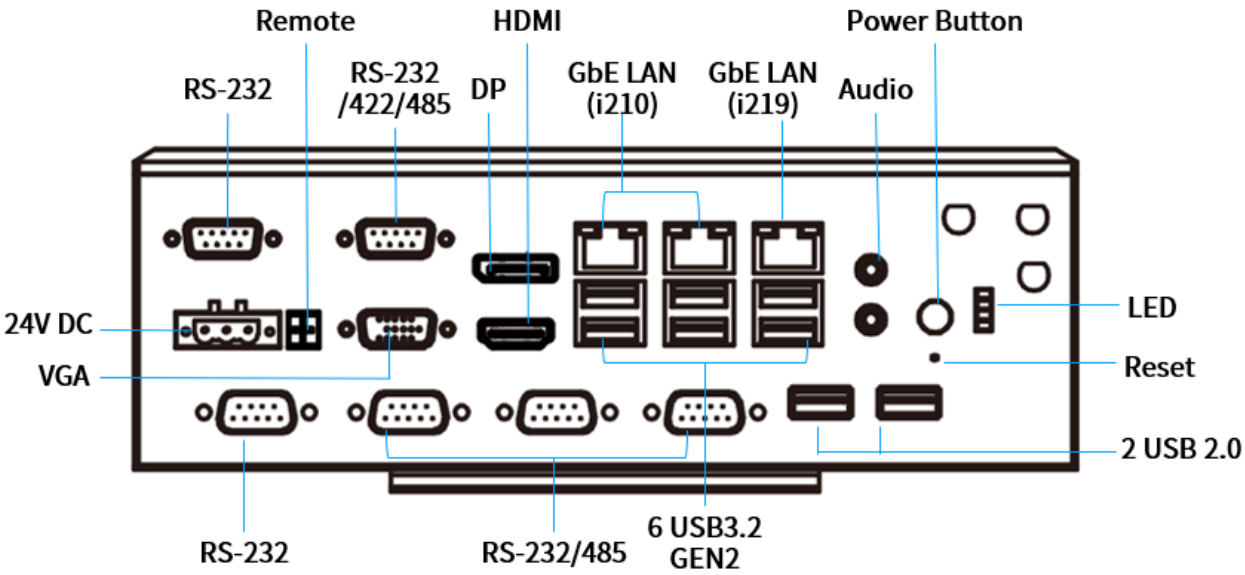
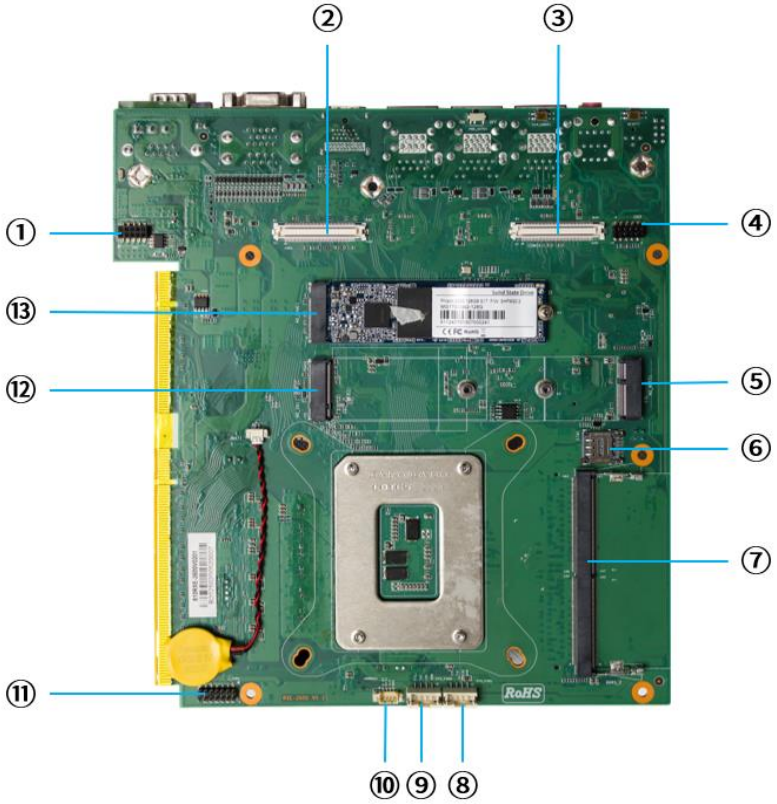


Figure 2-1 External I/O of the E511C-Q670

Internal interfaces of the E511C-Q670 are shown in the following figure.



No.	Mark	Description
1	CN2	VIN_S
2	CON1	BTB
3	CON2	BTB
4	CN3	DEBUG
5	M2_WIFI1	1 x M.2 2230 support Wi-Fi (PCIe protocol)
6	SIM1	NANO SIM
7	DDR5_2	262pin SODIMM DDR5
8	SYS_FAN1	+ V12S, SYSFAN_CTL, SYSFAN_TAC
9	SYS_FAN2	
10	JSMBUS1	SMBUS
11	J_TPM1	TPM (optional)
12	M2_5G1	1 x M.2 3052 support 4G & 5G, or 1 x M.2 2242 / 2280 support SATA3.0
13	M2_SATA	1 x M.2 2280 support SATA3.0

2.1 External IO

2.1.1 Power Connector

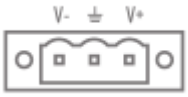


Figure 2-1 Power Connector 1

The E511C-Q670 is equipped with a 3 PIN Phoenix terminal power port that supports 24V DC input.

For the PIN definition, see Table 2-1.

Table 2-1	PIN definition of Power Connector 1
PIN 1	V-
PIN 2	GND
PIN 3	V+

2.1.2 DP

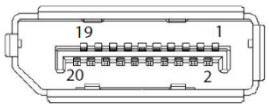


Figure 2-2 DP

E511C-Q670 is equipped with a DP 1.4a port, supports a resolution up to 4096 x 2304@60Hz. Table 2-2 describes the pin definition of the DP port.

Table 2-2	PIN definition of DP		
PIN 1	ML_Lane 0 (p)	**PIN 11**	GND
PIN 2	GND	**PIN 12**	ML_Lane 3 (n)
PIN 3	ML_Lane 0 (n)	**PIN 13**	CONFIG1
PIN 4	ML_Lane 1 (p)	**PIN 14**	CONFIG2
PIN 5	GND	**PIN 15**	AUX CH (p
PIN 6	ML_Lane 1 (n)	**PIN 16**	GND
PIN 7	ML_Lane 2 (p)	**PIN 17**	AUX CH (n)
PIN 8	GND	**PIN 18**	Hot Plug
PIN 9	ML_Lane2 (2)	**PIN 19**	Return
PIN 10	ML_Lane 3 (p)		

2.1.3 HDMI

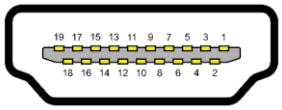


Figure 2-3 HDMI

E511C-Q670 is equipped with a HDMI 2.0b, supports a resolution up to 4096 x 2160@60Hz. Table 2-3 describes the pin definition of the HDMI.

Table 2-2	PIN definition of HDMI		
PIN 1	TMDS Data2+	**PIN 11**	TMDS Clock Shield
PIN 2	TMDS Data2 Shield	**PIN 12**	TMDS Clock–
PIN 3	TMDS Data2–	**PIN 13**	CEC
PIN 4	TMDS Data1+	**PIN 14**	Reserved (N.C. on device)
PIN 5	TMDS Data1 Shield	**PIN 15**	SCL(I^2C serial clock for DDC)
PIN 6	TMDS Data1–	**PIN 16**	SDA(I^2C serial data for DDC)
PIN 7	TMDS Data0+	**PIN 17**	DDC/CEC Ground)
PIN 8	TMDS Data0 Shield	**PIN 18**	+5 V Power
PIN 9	TMDS Data0–	**PIN 19**	Hot Plug Detect
PIN 10	TMDS Clock+		

2.1.4 VGA

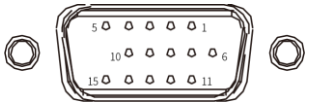


Figure 2-4 VGA

E511C-Q670 is equipped with a VGA, supports a resolution up to 1920 x 1200@60Hz. Table 2-4 describes the pin definition of the VGA.

Table 2-4	PIN definition of HDMI		
PIN 1	RED	**PIN 9**	KEY
PIN 2	GREEN	**PIN 10**	GND
PIN 3	BLUE	**PIN 11**	ID0
PIN 4	ID2	**PIN 12**	ID1
PIN 5	GND	**PIN 13**	HSYNC
PIN 6	RGND	**PIN 14**	VSYNC
PIN 7	GGND	**PIN 15**	ID3
PIN 8	BGND		

2.1.5 Ethernet (LAN)

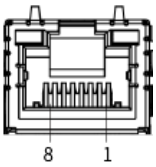


Figure 2-4 LAN

The E511C-Q670 series has 2 Ethernet ports controlled by independent Intel i210 chip and 1 Ethernet port controlled by an Intel i219 chip, each interface is controlled by a separate Intel network interface card chip. Table 2-5 describes the pin definition of the LAN.

Table 2-5	PIN definition of LAN	Description
PIN 1	TRD0P	Tranceive Data+
PIN 2	TRD0N	Tranceive Data-
PIN 3	TRD1P	Received Data+
PIN 4	TRD2P	Bi-directionalData+
PIN 5	TRD2N	Bi-directionalData-
PIN 6	TRD1N	Received Data-
PIN 7	TRD3P	Bi-directionalData+
PIN 8	TRD3N	Bi-directionalData-

2.1.6 USB 3.2

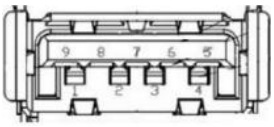


Figure 2-6 USB3.0

The E511C-Q670 series supports 6 USB3.2 GEN2 ports, which can be connected to the USB3.2 HD camera, and supports the plug and play and hot swap functions of external devices, allowing users to connect or disconnect the device at any time. Table 2-6 describes the pin definition of the USB3.2.

Table 2-6	PIN definition of USB3.2		
PIN 1	Vbus	**PIN 6**	StdA_SSRX+
PIN 2	D -	**PIN 7**	GND_DRIAN
PIN 3	D +	**PIN 8**	StdA_SSTX-
PIN 4	GND	**PIN 9**	StdA_SSTX+
PIN 5	StdA_SSRX-		

2.1.7 USB 2.0

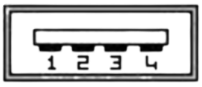


Figure 2-7 USB2.0

The E511C-Q670 series supports 2 USB2.0 ports, and supports the plug and play and hot swap functions of external devices, allowing users to connect or disconnect devices at any time. For details about pin definitions of USB2.0 ports, see Table 2-7.

Table 2-7	PIN definition of USB2.0	Description
PIN 1	Vbus	+5V
PIN 2	D -	Data -
PIN 3	D +	Data +
PIN 4	GND	Ground
PIN 5	Vbus	+5V

2.1.8 Serial Port (COM1-COM6)

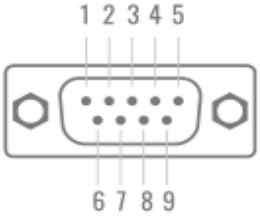


Figure 2-8 COM

E511C-Q670 has 6 DB9 COM, COM 1: RS-232/422/485, COM 2&6: RS-232, COM 3&4&5: RS-232/485 , which can communicate with multiple devices. Table 2-6 describes the pin definition of the Serial Ports.

Table 2-8	PIN definition of COM		
	RS-232	RS-422	RS-485
PIN1	DCD	Tx-	DATA -
PIN2	RXD	Tx+	DATA+
PIN3	TXD	Rx+	NC
PIN4	DTR	Rx-	NC
PIN5	GND	GND	GND
PIN6	DSR	NC	NC
PIN7	RTS	NC	NC
PIN8	CTS	NC	NC
PIN9	RI	NC	NC

2.1.9 Remote

Figure 2-9 Remote

E511C-Q670 has a remote, the pin definition please refer to Table 2-9.

Table 2-9	PIN definition of Remote
PIN 1	POWERSW
PIN 2	GND

2.1.10 Audio

Figure 2-10 Audio

The E511C-Q670 series has two audio ports for Line-out and Mic-in. Figure 2-10 shows the ports.

2.1.11 Power Button

Figure 2-11 Power Button

The E511C-Q670 series is equipped with a power button to control computer on and off.

2.1.12 Reset

Figure 2-12 Reset

There is a reset button on the E511C-Q670. Press it to restart the system.

2.1.13 LED Indicator

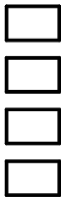


Figure 2-13 LED Indicator

E511C-Q670 series front panel has 4 LED indicators, from top to bottom are SATA (hard disk indicator), DG (memory indicator), USER1 (user defined indicator 1), USER2 (user defined indicator 2), the indicator status is described as follows:

Table 2-10	LED Status Description
SATA	Yes: Light steady on / Working: Flashing / None: Light off
DG	Yes: Light on / None: Light off
USER1	User programmable indicator 1
USER2	User programmable indicator 2

2.2 Internal connector interface

2.2.1 Nano SIM

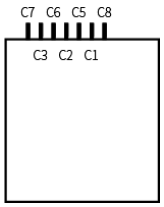


Figure 2-14 Schematic diagram of Nano SIM interface

The internal main board of the E511C-Q670 has a Nano SIM card slot, the bit number is marked SIM1, which can support the insertion of Nano SIM cards. The pins are defined as follows:

Table 2-11	Nano SIM interface pin definition		
C1	VCC	C5	GND
C2	RST	C6	VPP
C3	CLK	C7	I/O
		C8	NC1

2.2.2 Internal USB2.0

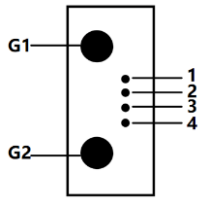


Figure 2-15 Internal USB 2.0 Type-A interface diagram

The E511C-Q670 has an internal USB 2.0 Type-A interfaces, and the pins are defined as follows:

PIN	Internal USB 2.0 Type-A
1	USBPWF1
2	USB_HUB_1-
3	USB_HUB_1+
4	GND
G1	GND
G2	GND

2.2.3 RTC Battery

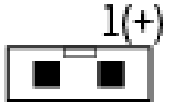


Figure 2-16 RTC Battery Interface Diagram

The E511C-Q670 has an onboard button battery, and the interface pins are as follows:

PIN	Signal
1	+VBAT_a1
2	GND

2.2.4 M.2 M-Key

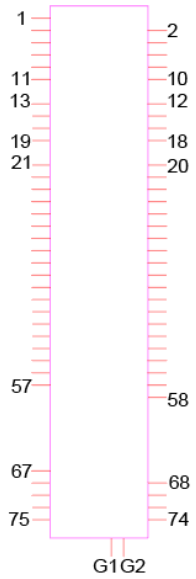


Figure 2-17 M.2 M-Key schematic

There is a M.2 M-Key on the internal main board of E511C-Q670, and the bit number is marked M2_SATA, supports M.2 2280 SATA3.0. The pins are defined as follows:

PIN	Signal	PIN	Signal	PIN	Signal	PIN	Signal
1	GND	21	GND	41	SATA4_RXP	61	NC
2	VCC3_M.2_NVME	22	NC	42	NC	62	NC
3	GND	23	CPU_X4_TXN2	43	SATA4_RXN	63	NC
4	VCC3_M.2_NVME	24	NC	44	NC	64	NC
5	CPU_X4_RXN3	25	CPU_X4_TXP2	45	GND	65	NC
6	NC	26	NC	46	NC	66	NC
7	CPU_X4_RXP3	27	GND	47	SATA4_TXN	67	NC
8	NC	28	NC	48	NC	68	NC
9	GND	29	CPU_X4_RXN1	49	SATA4_TXN	69	PEDET
10	DAS/DSS#	30	NC	50	PERST#	70	VCC3_M.2_NVME
11	CPU_X4_TXN3	31	CPU_X4_RXP1	51	GND	71	GND
12	VCC3_M.2_NVME	32	NC	52	CLKREQ#	72	VCC3_M.2_NVME
13	CPU_X4_TXP3	33	GND	53	CLK_PCIE_3N	73	GND
14	VCC3_M.2_NVME	34	NC	54	PEWAKE#	74	VCC3_M.2_NVME
15	GND	35	CPU_X4_TXN1	55	CLK_PCIE_3P	75	GND
16	VCC3_M.2_NVME	36	NC	56	NC	G1	GND
17	CPU_X4_RXN2	37	CPU_X4_TXP1	57	GND	G2	GND
18	VCC3_M.2_NVME	38	DEVSLP	58	NC	H1	NC
19	CPU_X4_RXP2	39	GND	59	NC	H2	NC
20	NC	40	NC	60	NC		

2.2.5 M.2 E-Key

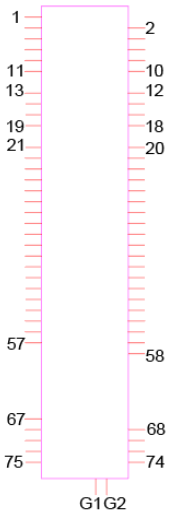


Figure 2-18 M.2 E-Key schematic

There is a M.2 E-Key on the internal main board of E511C-Q670, and the bit number is marked M2_WIFI1, supports M.2 2230 (PCIe protocol). The pins are defined as follows:

PIN	Signal	PIN	Signal	PIN	Signal	PIN	Signal
1	GND	21	NC	41	PCIE_RXP4	61	NC
2	VCC3_M.2_E	22	NC	42	NC	62	NC
3	USB20_P7_R	23	NC	43	PCIE_RXN4	63	GND
4	VCC3_M.2_E	24	NC	44	NC	64	NC
5	USB20_N7_R	25	NC	45	GND	65	NC
6	NC	26	NC	46	NC	66	PEREST1#
7	GND	27	NC	47	CLK_PCIE_16P	67	NC
8	NC	28	NC	48	NC	68	NC
9	NC	29	NC	49	CLK_PCIE_16N	69	GND
10	NC	30	NC	50	NC	70	NC
11	NC	31	NC	51	GND	71	NC
12	NC	32	NC	52	PERST0#	72	VCC3_M.2_E
13	NC	33	GND	53	CLKREQ0#_R	73	NC
14	NC	34	NC	54	NC	74	VCC3_M.2_E
15	NC	35	PCIE_TXP4	55	WAKE#_R	75	GND
16	NC	36	NC	56	NC	G1	GND
17	NC	37	PCIE_TXN4	57	GND	G2	GND
18	GND	38	NC	58	NC	H1	NC
19	GND	39	GND	59	NC	H2	NC
20	NC	40	NC	60	NC		

2.2.6 M.2 B-Key

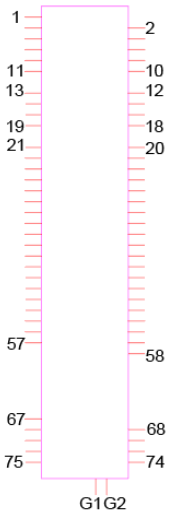


Figure 2-19 M.2 B-Key schematic

There is a M.2 B-Key on the internal main board of E511C-Q670, and the bit number is marked M2_5G1, supports M.2 3052 (4G & 5G) / M.2 2242 & 2280 (SATA3.0). The pins are defined as follows:

PIN	Signal	PIN	Signal	PIN	Signal	PIN	Signal
1	M.2_CONFIG_3	21	M.2_CONFIG_0	41	PCIE18_RXP/SATA5_TXN	61	NC
2	VCC3_M.2_S2	22	NC	42	NC	62	NC
3	GND	23	NC	43	PCIE18_RXN/SATA5_RXN	63	NC
4	VCC3_M.2_S2	24	NC	44	NC	64	NC
5	GND	25	BodySAR_S	45	GND	65	NC
6	W_PWR_ON	26	NC	46	NC	66	USIM1_CD_R
7	USB20_P3_R	27	GND	47	PCIE18_TXN/SATA5_TXN	67	W_RESET#
8	W_DISABL	28	NC	48	NC	68	NC
9	USB20_N3_R	29	USB31_RXN7_R	49	PCIE18_TXP/SATA5_TXP	69	M.2_CONFIG_1
10	NC	30	USIM_RST	50	PLTRST#_R	70	VCC3_M.2_S2
11	GND	31	USB31_RXP7_R	51	GND	71	GND
12	NC	32	USIM_CLK	52	NC	72	VCC3_M.2_S2
13	NC	33	GND	53	CLK_PCIE_7N	73	GND
14	NC	34	USIM_IO	54	NC	74	VCC3_M.2_S2
15	NC	35	USB31_TXN7_R	55	CLK_PCIE_7P	75	M.2_CONFIG_2
16	NC	36	USIM_VCC	56	NC	G1	GND
17	NC	37	USB31_TXP7_R	57	GND	G2	GND
18	NC	38	NC	58	NC	H1	NC
19	NC	39	GND	59	NC	H2	NC
20	NC	40	NC	60	NC		

3. Operating instructions

This chapter describes the normal operation of E511C-Q670 series products, describes the working environment of industrial computers, installation procedures, and detailed operation of system protection functions.

3.1 Unpacking Inspection

Before opening the package, please check whether the product model indicated on the outer package is consistent with the ordered product. After opening the package, please first check the surface of the computer for mechanical damage, and then carefully check whether the accessories are complete according to the packing list or order contract. If the surface of the computer is damaged or the product content does not conform, please do not use it and contact the dealer immediately.

	*To prevent the computer from being damaged by static electricity, please touch effectively grounded metal objects before touching the computer circuit to release the static charge carried by the body, and wear anti-static gloves.*

3.2 Working Environment

1) Computers need to be far away from commercial electrical appliances and environments with high power and strong electromagnetic interference;
2) The working ambient temperature shall be between 0°C and 50°C;
3) The power supply voltage shall be kept between 200V and 240V.

3.3 Preparation

Please prepare the following items before installation:

1） E511C-Q670 series industrial computers, as well as related power supplies and cables;

2） Display, and display connecting line between display and IPC;

3） USB Keyboard and Mouse;

4） PLC, Camera and corresponding connecting line;

5） Power supply.

3.4 Installation Steps

3.4.1 Hardware Connection

1） Connect the computer to the display with DP or VGA cable;

2） Connect the computer power cable and the USB port to the keyboard and mouse;

3） Connect other hardware such as PLC and camera according to corresponding interface

4） Connect the power adapter to 220V voltage and start it.

3.4.2 Gigabit network card camera configuration

1）Confirm that the camera is connected to the power supply and that the camera is connected to the industrial computer with a network cable

2）Turn off firewall

Control panel ->Windows Defender-> set up -> Implementation of protection -> Remove tick and administrator -> Start Windows Defender->Remove tick.

3）Open camera software

4）Advanced network settings

Device Manager -> network adapter -> attribute -> dispose -> Advanced Page，Set the value of

"Jumbo Packet" to the maximum value of "9014 Bytes"; Select the attribute of "Internet Protocol Version 4 (TCP/IPv4)" in the Ethernet attribute, and set its IP address to the address in the same network segment as the camera IP address, as shown in Figure 3-1.

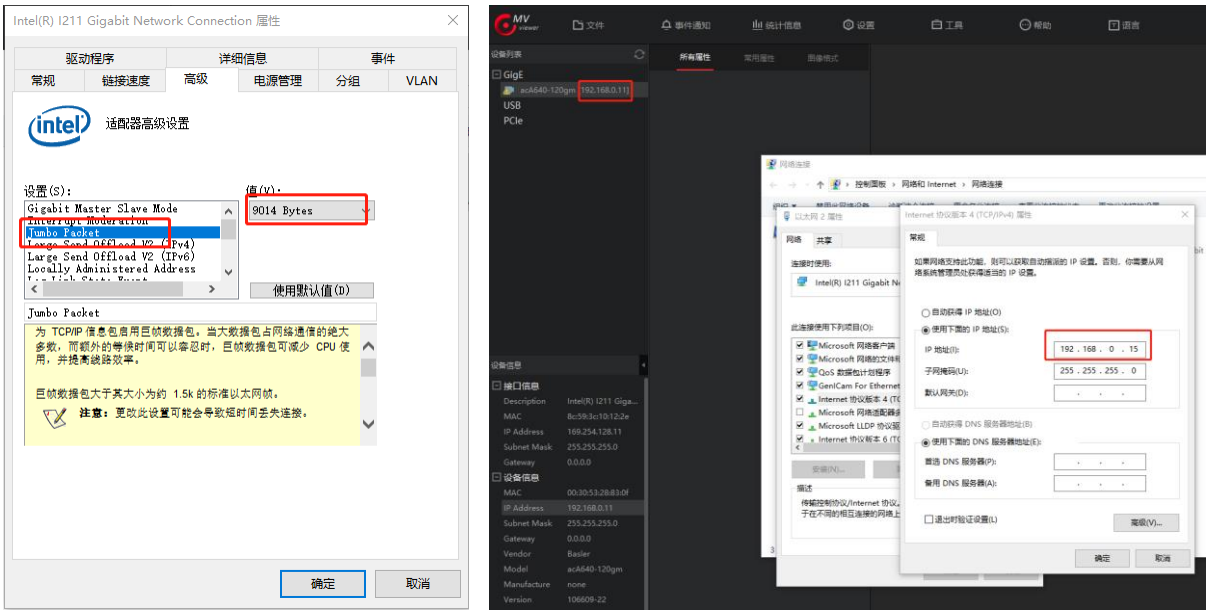


Figure 3-1 Diagram of advanced Network Settings

3.4.3 Several parameters that need to be adjusted during image acquisition

Packet Size parameter setting: This parameter unit is bytes, and should be set to a parameter close to the network card's giant frame parameter as much as possible, for example, giant frame=9K, and the Packet Size of the camera software should be set to 8000 or close to 9K. Click the continue shot in Pylon viewer. The rule is to see that the camera can achieve full frame rate acquisition until the Packet Size is set to the larger the better (not exceeding the megaframe size), which can effectively reduce the CPU utilization.

3.5 System Protection

3.5.1 System repair

A hidden space (A disk) is allocated in the E511C-Q670 series industrial computer to store the backup system. Users can repair the system through simple operation.

1) Power on the industrial computer and press "F8" to enter the repair mode;

2) Select "Repair Computer", enter startnet.cmd, type "0" according to the prompt, and press Enter to start the system repair (system repair is generally a backup system. If there is no backup in advance, the default is a pure system. After repair, the file is not retained, which is equivalent to reinstalling the system)

3.5.2 System Backup

E511C-Q670 series industrial computers are allocated with a hidden space (A disk) to store the backup system. Users can backup the system independently through simple operation.

1) Power on the industrial computer and press "F8" to enter the repair mode;

2) Select "Repair the computer", enter startnet.cmd, type "1" according to the prompt, and press Enter to start the backup of the system (the backup system is the content of the current system, please note that the size of the system should not exceed 15G)

4. BIOS Setup Instruction

4.1 BIOS Description

BIOS is a basic input and output control program stored in Flash Memory. It is a bridge between the motherboard and the operating system and is responsible for managing the relevant parameter settings between the motherboard and the expansion card. When the computer is activated, it will be controlled by the BIOS program. First, a self-test called POST will be executed. It will detect all hardware devices and confirm the synchronization hardware parameters; When all the tests are completed, it will transfer the control of the system to the operating system (OS). Because BIOS is the only channel between hardware and software, how to properly set the parameters in BIOS will determine whether your computer runs stably and works in the best state. Therefore, the correct setting of BIOS is the key factor of system stability, thus ensuring that the system performance can reach the best state.

CMOS Setup will store the set data in the built-in CMOS SRAM on the motherboard. When the power is turned off, the lithium battery on the motherboard continues to supply power to the CMOS SRAM. The BIOS setup utility allows you to configure:

1) Hard drives and peripherals
2) Video display type and display options
3) Password protection
4) Power management features

	*For the BIOS version of the motherboard is constantly upgraded, the description of BIOS in this manual is for reference only. We do not guarantee the consistency between the relevant contents in this manual and the information you have obtained.*

4.1.1 Enter CMOS Setup

When the computer starts, the BIOS enters the power-on self-test (Post) program. The self-test program is a series of diagnostic programs fixed in the BIOS. When the self-test program is completed, no errors are encountered. If you want to enter the BIOS, press the DEL key or ESC key until you enter the BIOS interface. If this message disappears before you respond, you can turn off and restart your computer, or press<Ctrl>+<Alt>+<Delete>to restart your computer at the same time.

4.1.2 Function Keys and Auxiliary Instructions

↑ (Up arrow)	Used to move to the previous item
↓ (Down arrow)	Used to move to the next item
← (Left arrow)	Used to move to the left item
→ (Right arrow)	Used to move to the right item
ESC	Used to exit the current screen
Enter	Used to selection confirmation
+	Used to change the setting state or increase the value content
—	Used to change the setting state or decrease the value content
F1	Used to display help
F2	Used to load the last set value
F3	Value for loading optimization
F4	Used to save the set value and leave the CMOS SETUP program

Auxiliary description of main screen:

When you are in the Setup main screen, as the options move, the main settings of the corresponding options are displayed below.

If you want to leave the auxiliary instruction window, just press the [ESC] key.

4.2 Main Menu Function

When you enter the CMOS setup setting menu, you can see the main menu shown in Figure 4.1 at the top of the screen. In the main menu, you can select different setting options by pressing the left and right direction keys. After selecting the submenu, the detailed setting options will be displayed below.

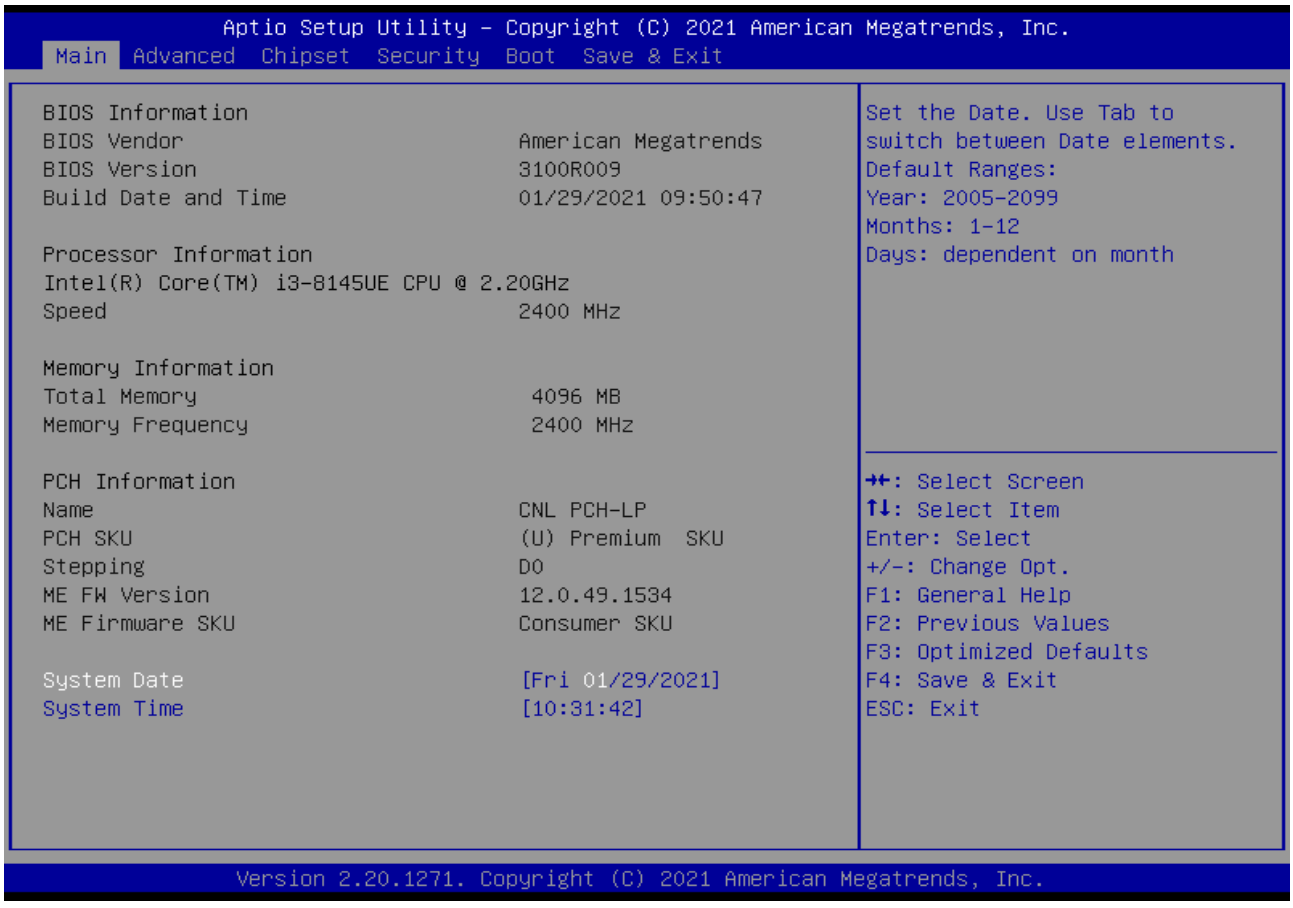


Figure 4-1 Main menu

1) Main (Standard CMOS Function Settings)

   Set date, time, etc.

2) Advanced (Advanced BIOS Function Settings)

   Set special functions provided by BIOS, such as CPU, USB, PCI, network port, etc.

3) Chipset(Chipset Performance Settings)

Set North Bridge、South Bridge, etc.

4) Security (Set administrator/user password)

5) Boot (Launch configuration feature)

6) Save & Exit

This option includes discard changes/exit without saving/exit without saving, etc.

4.3 Main (Standard CMOS Function Settings)

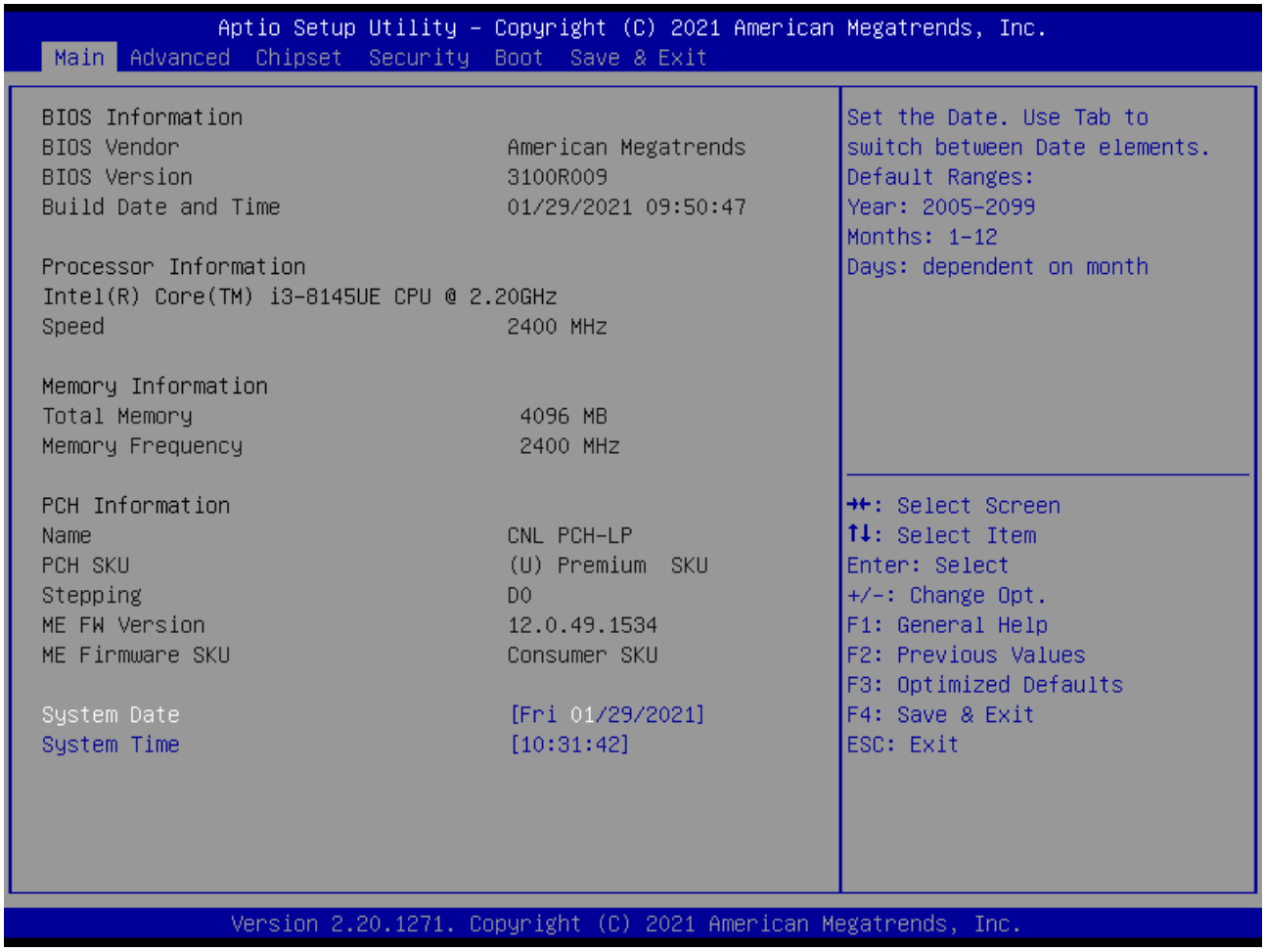


Figure 4-2 Main menu

1) System Time(hh:mm:ss) (Time setting)

Set the time in the computer in the format of “hour/minute/second”

2) System Date(mm:dd:yy) (Date setting)

Set the date in the computer in the format of “month/day/year”

4.4 Advanced (Advanced BIOS Function Settings)

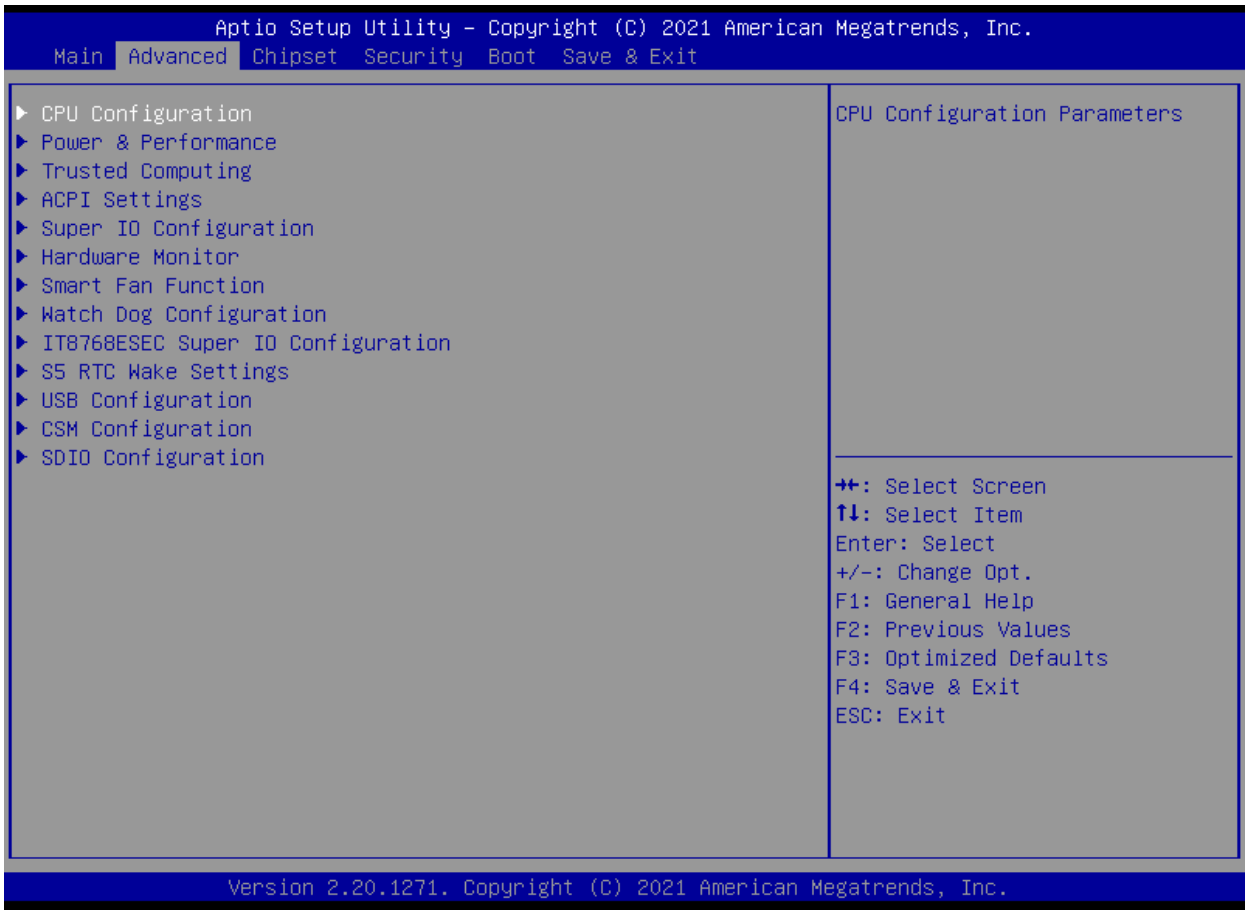


Figure 4-3 Advanced Menu

1) CPU Configuration

2) Power & Performance

3) Trusted Computing

4) ACPI Settings

5) Super IO Configuration

6) Hardware Monitor

7) Smart Fan Function

8) Watch Dog Configuration

9) IT8786ESEC Super IO Configuration

10) S5 RTC Wake settings

11) USB Configuration

12) CSM Configuration

13) SDIO Configuration

4.5 Chipset (Chipset Performance Settings)

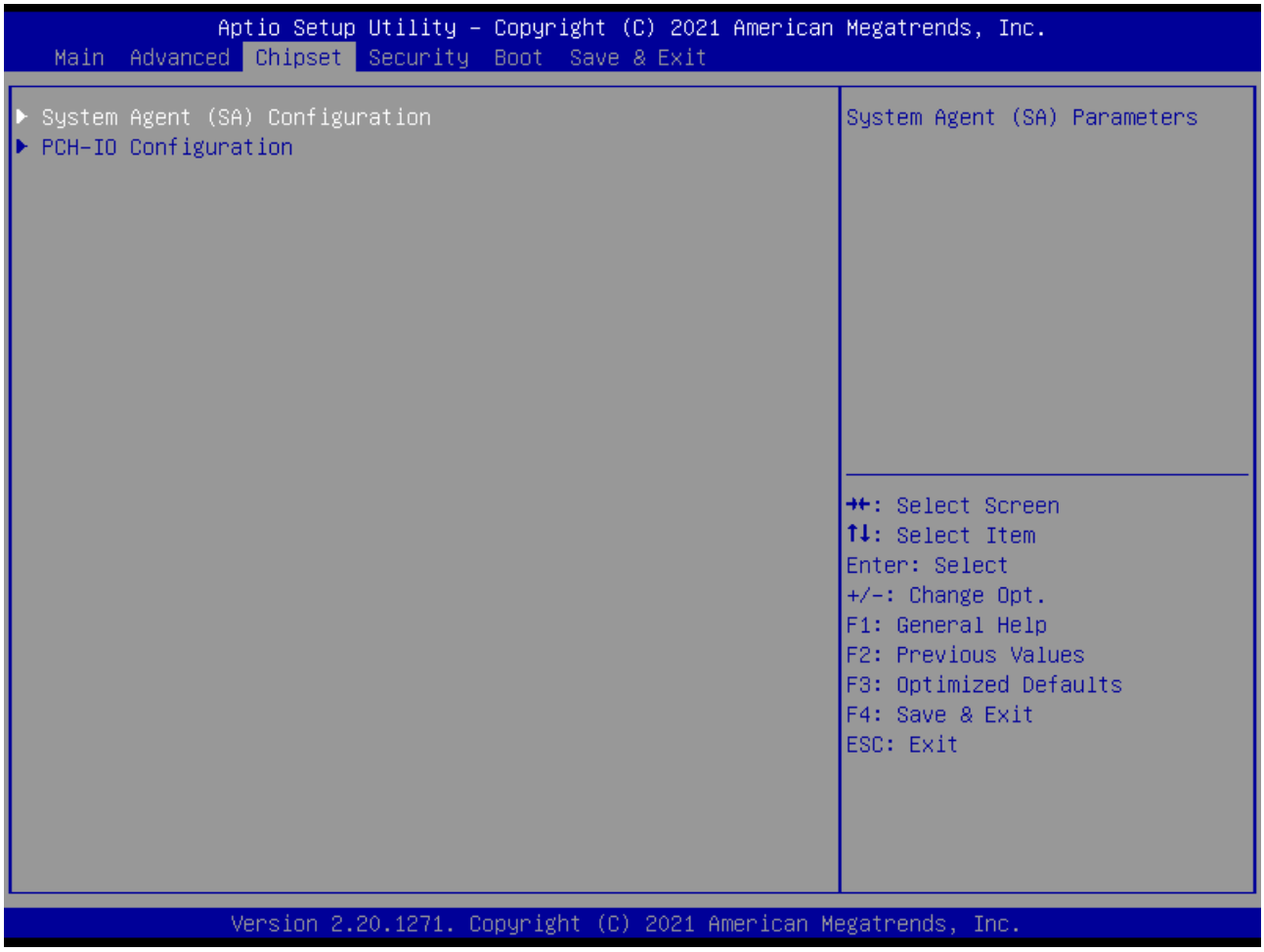


Figure 4-4 Chipset Menu

1) System Agent（SA）Configuration

2) PCH-IO Configuration

4.6 Security (Set administrator/user password)

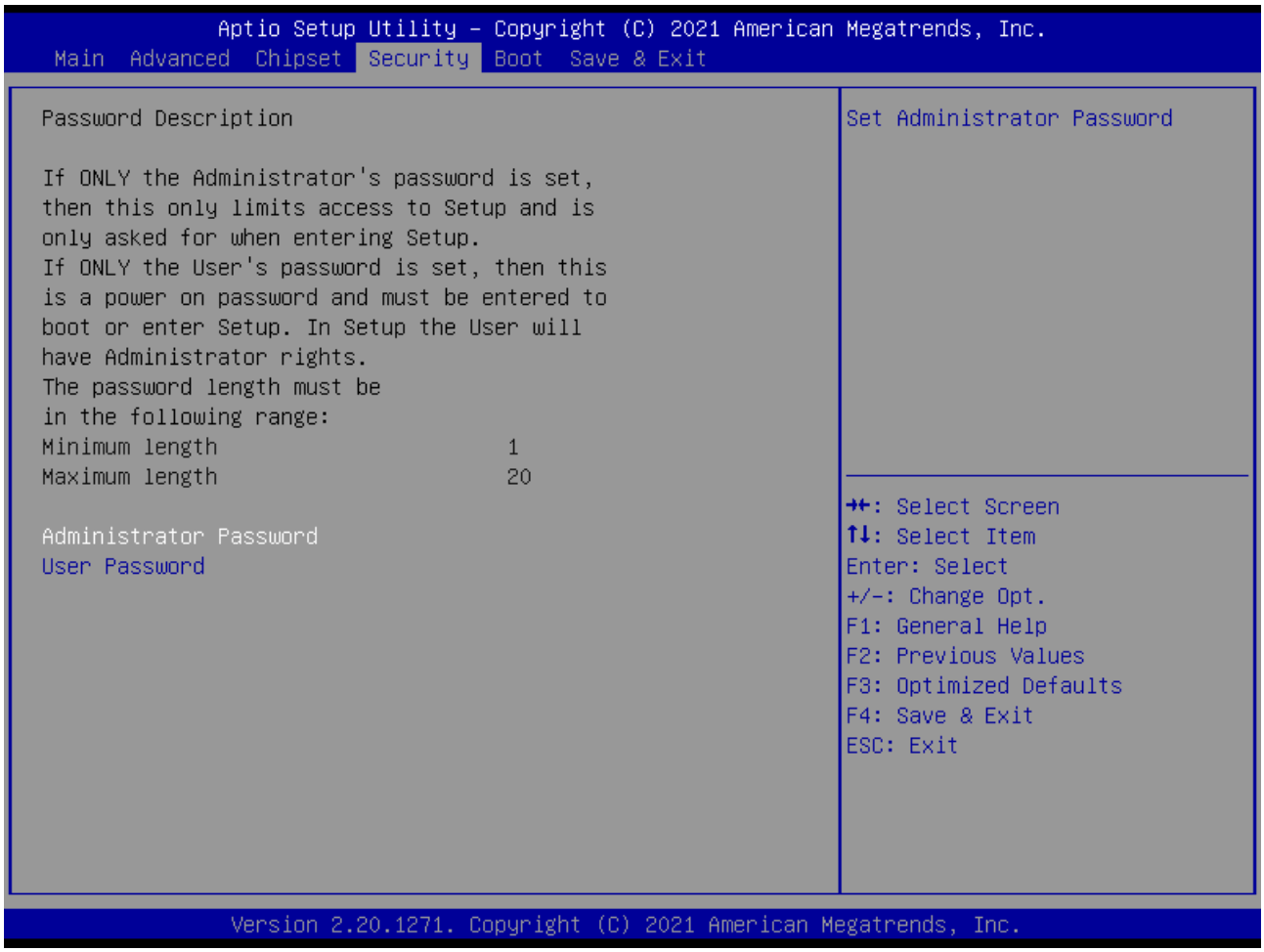


Figure 4-5 Security Menu

1) Administrator Password：Set the superuser password option, which has the highest permissions.

When you select this function, the following message will appear: Crate New Password ******

Enter a password of up to twenty characters, and then press the<Enter>key. BIOS requires to enter the same password again. After entering, BIOS saves the set password. Once you use the password function, you will be asked to enter the password before entering the BIOS setup program each time. This can prevent any unauthorized person from using your

calculation.

2) User Password：Set the user password option. This password permission will be restricted and some settings cannot be changed.

When you select this function, the following message will appear: Crate New Password ******

Enter a password of up to twenty characters, and then press the<Enter>key. BIOS requires to enter the same password again. After entering, BIOS saves the set password. Once you use the password function, you will be asked to enter the password before entering the BIOS setup program each time.

4.7 Boot (Boot Settings)

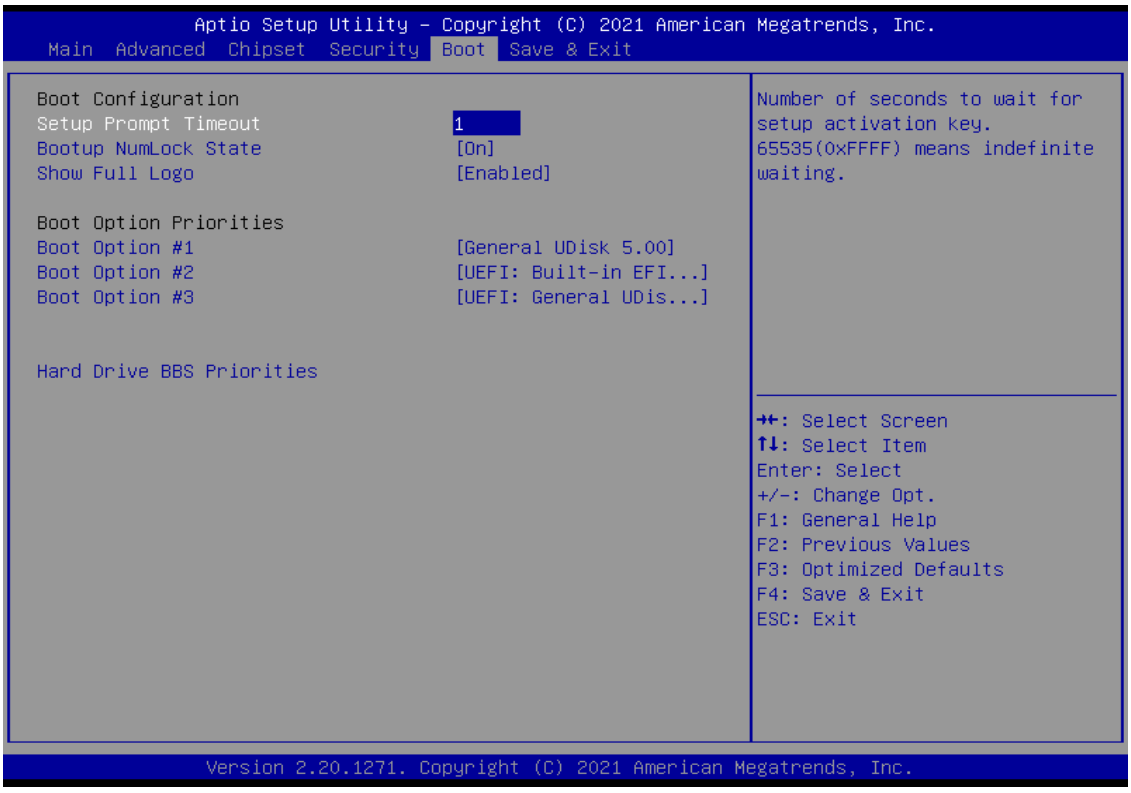


Figure 4-6 Boot Menu

1) Boot Configuration

Setup Prompt Timeout:

The POST dwell time is displayed when the machine is turned on. The larger the value, the

longer the dwell time.

Bootup NumLock State:

The setting values are: [On]/[Off]. This option specifies the state of the Num Lock key on the keyboard after the computer is started.

Quiet Boot:

The setting values are: [Disabled]/[Enabled]. This option specifies whether to display LOGO when the computer starts.

2) Boot Option Priorities

Boot Option #1：First startup option

Boot Option #2：Second startup option

Boot Option #3：Third startup option

Fast Boot:

The setting values are: [Disabled]/ [Enabled]

3) Hard Drive BBS Priorities

4.8 Save & Exit

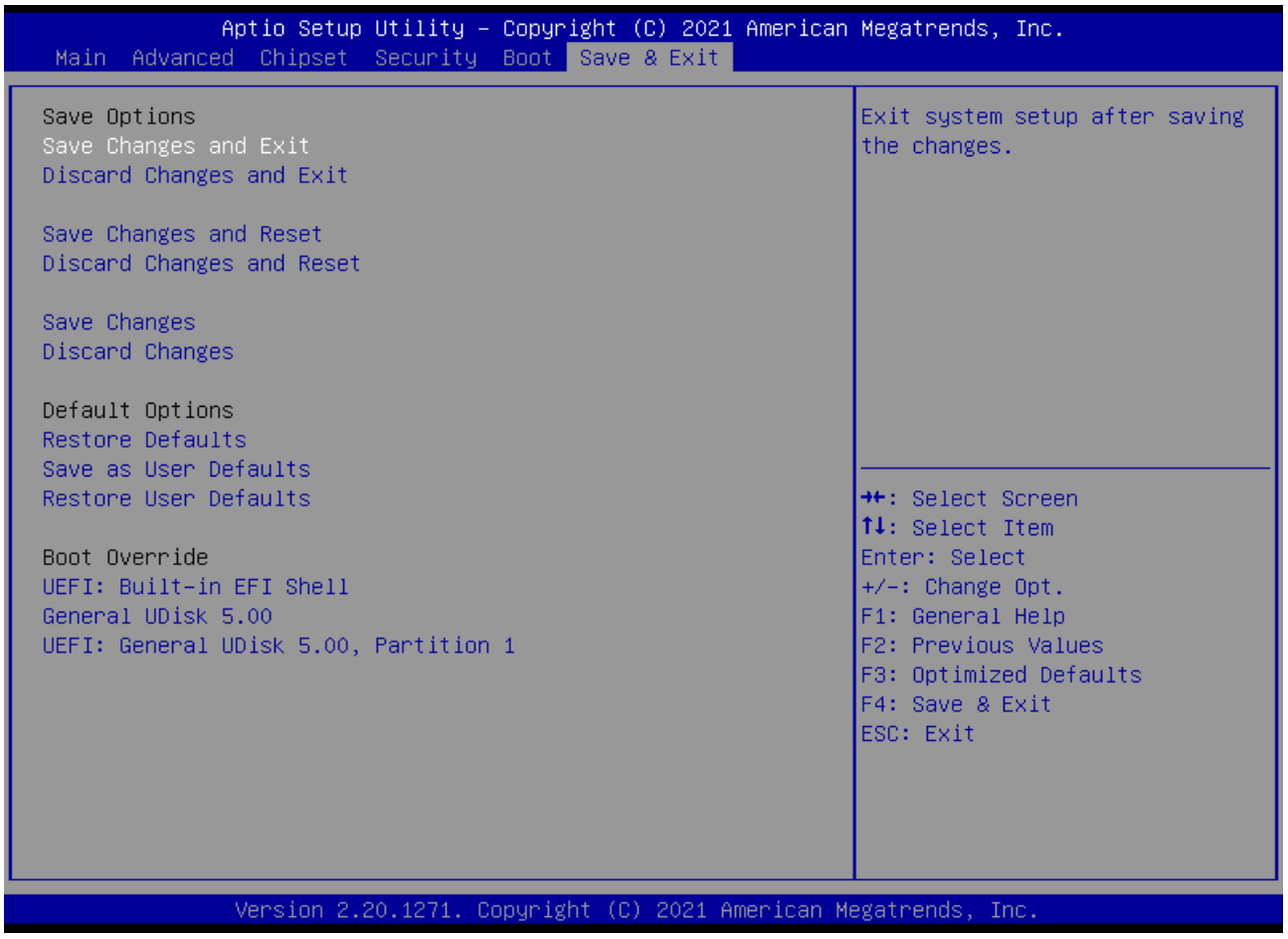


Figure 4-7 Save & Exit Menu

1) Save Options

Save Changes and Reset

Discard Changes and Reset

2) Restore Defaults

Restore Defaults：Load Optimal Defaults

This option in the main menu allows the user to restore all BIOS options to the optimized value. The optimization default value is the default value set to optimize the performance of the motherboard. If you select YES and press Enter, you can save all the setting results to CMOS SRAM and leave the BIOS setting program; If you do not want to save, select NO to return to the main menu. Save as User Defaults

5. Troubleshooting Guide

5.1 Abnormal startup

1) After pressing the power button to turn on the machine, the power indicator does not light up

a) Check whether the industrial computer is connected correctly and whether the power socket is powered;

b) Check the industrial computer power adapter, plug and unplug the power cable, display data cable and keyboard and mouse cable,Confirm whether the connection between the display and the host is correct;

c) Check whether the positive and negative poles of the power plug are reversed.

2) The power indicator is on, but the display does not display

a) Check the power supply and switch of the display;

b) Check whether the data line of the display has poor contact;

c) If DisplayPort or VGA converter is used, replace the converter of other brands;

d) Observe the keyboard and mouse indicators. If the keyboard indicators and mouse indicators are on, replace the display for troubleshooting.

3) After power-on, the motherboard fails to self-check successfully

Press the [Del] key to reset CMOS or clear CMOS.

4) The mouse and keyboard cannot be used after power-on

a) Check whether the keyboard lock is locked and release the keyboard lock;

b) If not, check whether the connection between the motherboard and the backplane and whether the keyboard and mouse are connected correctly;

c) Check whether the keyboard and mouse are connected to the one-in-two adapter. If yes, connect the keyboard and mouse in reverse;

d) Replace one split and two connectors;

e) Replace the mouse and keyboard.

5) Unable to boot the system from the hard disk after power-on

a) Press "Del" key to check whether the parameter setting and boot sequence of CMOS hard disk are correct;

b) After booting with optical drive or floppy drive, check whether the hard disk has a boot system or whether the hard disk is properly partitioned and has activated boot Zoning;

c) When starting, press F8 to select the last correct configuration to start the operating system;

d) Replace the hard disk and reinstall the system.

5.2 System crashes or blue screen during operation

1) Check whether the temperature of industrial computer is too high;

2) Check whether the wrong or expired driver is installed;

3) Check whether the system is infected with virus;

4) Whether the system files or applications and disks are damaged.

5.3 Unable to install device driver correctly

1) Check whether the driver is correct and up-to-date;

2) Whether the driver needs the support of the patch of the operating system;

3) Whether the resources occupied by other devices conflict with those occupied by the devices to be driven;

4) If it is a peripheral device, change a slot and reinstall the drive;

5) Replace the device and reinstall the driver.

5.4 BIOS Upgrade

1) Prepare a UEFI startup USB flash disk. If not, you need to make one;

2) Please copy the required BIOS file and batch processing to the root directory of the USB flash drive;

3) Press F7 to start the machine, select the prepared UEFI USB flash disk, and press Enter to enter the shell;

4) Enter FS0: Enter (fs0: if no other storage device is connected);

5) Run flash.nsh, brush BIOS, and do not power off in the middle;

6) After brushing the BIOS, power off, then power on again, restart the industrial computer, enter the BIOS settings, and press F3 to load the BIOS optimized defaults (Enter to select Y).

The following conditions may cause the refresh to fail and the machine cannot be started.

1) Power off during refresh;

2) Virus exists in the USB flash drive;

3) BIOS file is damaged;

4) In non-UEFI system.

If the BIOS cannot be started after refreshing, you can try to clear the BIOS. If the situation persists, please return to the factory for maintenance.