

User manual of the product

PCX-9502



Document information

keywords

Small volume , Embedded , Fanless

overview

This paper describes the function and methods used of PCX-9502.

Version information		
version	date	Description
V1.0	2019-05-06	Document creation.
V1.1	2019-08-15	Adjust the format of the document.
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V1.6	2021-10-12	Added the description of the power supply current.
V1.7	2021-10-13	Update product pictures.
V1.8	2021-11-24	Update GPIO wiring diagram and company LOGO.

Statement

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Precautions for safe use:

- Please read this manual carefully before use.
- Turn off the power when disassembling the product.
- Operators need to take anti-static measures before touching or other operations that may produce static shock.
- Avoid unnecessary damage to products caused by frequent start-up.



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Chapter 1 Product Introduction

1.1 Product brief introduction

PCX-9502 is a fully functional, small size industrial computer. It uses a Baytrail Intel®Celeron J1900 processor, onboard DDR3L 1333MHz memory (up to 4GB). PCX-9502 contains the following interfaces: 3*LAN, 1*HDMI, 1*VGA, 8*GPIO, 4*RS-232, 1*RS-485, 4*USB2.0, 1*USB3.0. For the machine vision application of 1-2 industrial cameras, we designed 2*DC OUT 12V for the power supply of industrial cameras. In addition, we also designed a one-key backup and one-key recovery. It is easy to operate.

The case of pcx-9502 is made of aluminum alloy without fan. It uses a high-speed and stable SSD storage scheme instead of the traditional mechanical hard disk scheme, the calorific value is reduced by 90%.

1.2. Product features

- ❖ Intel®Celeron J1900 CPU,2MB Cache,4Cores, 4 Threads,2.0GHz ,TDP 10 W
- ❖ Onboard 4GB DDR3L 1333MHz memory, up to 4GB
- ❖ 3*Intel I211-AT 10/100/1000M network
- ❖ 1*HDMI,1*VGA
- ❖ 1*USB3.0,4*USB2.0,4*GPI, 4*GPO,1*MSATA
- ❖ 4*RS-232 (standard configuration is 2*RS-232) ,1*RS-485
- ❖ With one-key backup and one-key recovery function
- ❖ DC 12V power supply , 2*DC OUT 12V
- ❖ Easy to integrate and maintain

1.3. Product specifications

PCX-9502 series specification introduction		
Core function	CPU	Intel® Celeron J1900, 2MB Cache, 4Cores, 4 Threads, 2.00GHz, TDP 10W, 22nm
	Memory	Onboard 4GB DDR3L 1333MHz memory (You can also customize 2GB)
	OS support	Windows 7/Linux
	BIOS	AMI BIOS , Support to modify the boot LOGO
Power	Power Requirement	DC IN 12V, 12V/3A
	start-up	This machine can turn itself on when it is charged.
	Switch I	1*Press-button switch with lamp
	Switch II	1*Trigger switch
I/O Interfaces	LAN	3*GE, Intel® I211-AT network chip.
	USB I	4*USB2.0 (1 of them built-in)
	USB II	1*USB3.0
	Serial port 1-4	4*three-wire RS-232 , Adopt double-layer DB9 interface
	HDMI	1*HDMI , The maximum resolution is 1920*1080.
	VGA	1*VGA interface, The maximum resolution is 1920*1080.
	GPI	GPIO with opto-isolator, 4*GPI, 4*GPO, 24V
	GPO	
	Power output	2*DC 12V OUT, the power is 15W.
	COM5	1*RS-485
	Backup & Recovery	1*One-key backup button
		1*One-key recovery button
	Indicator light	1*Green indicator light When the indicator light is on, the system is performing backup or recovery operations.
I/O Interfaces	Storage	1*MINI PCI-E, support MSATA (32GB/64GB/128GB/256GB/480GB is optional)
	WIFI	1*MINI PCI-E, support WIFI.
	USB2.0	1*USB2.0
Watchdog	WDT	Support level 256 (0~255), programmable
Electrical characteristics	Operating humidity	5% ~ 90% , no condensation. (Excluding electronic disk)
	Operating temperature	0°C ~ 60°C (-20°C~60°C is optional) (Excluding electronic disk)

	Storage temperature	-40°C ~ 85°C(Excluding electronic disk)
Structure	Size (mm)	144*128.5*54mm
	Weight	0.94KG
overall power consumption	TDP	4W~16W

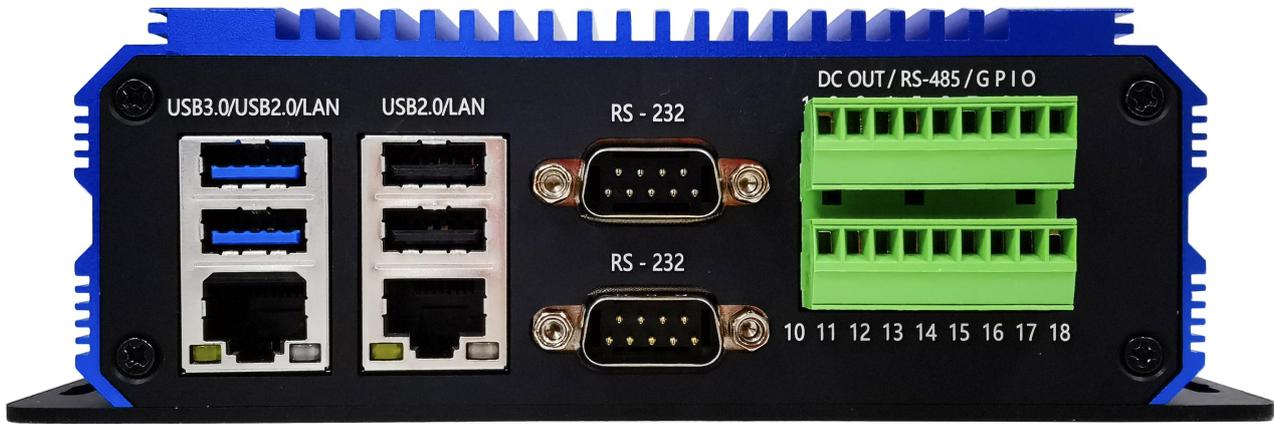
• Chapter 2 The interface definition

2.1. Silk-screen and interface instructions for front panel



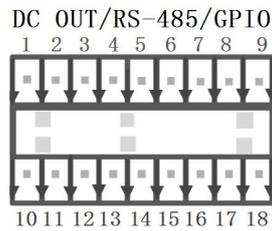
Number	Silk-screen	Function	Type of interface
1	DC IN 12V	1*12V power input interface	1*2PIN 5.08mm Phoenix terminal
2	Recovery & Backup	1*One-key recovery button and 1*One-key backup button	Double-layer black button
3	(Green LED light)	1*Indicator light	When the indicator light is on, the system is performing backup or recovery operations.
4	HDMI	Hd display interface	HDMI TYPE A interface
5	VGA	display interface	DB-15
6	LAN	1*GE	Standard RJ45 interface
7	PWR GND LED	Trigger switch interface and power LED	1*3PIN 3.81mm Phoenix terminal
8	⏻	Switch button	Round button with light
9	ANT	WIFI antenna reserve position	Φ6.5

2.2. Silk-screen and interface instructions for back panel



Number	Silk-screen	Function	Type of interface
1	USB3.0/USB2.0/LAN	1*USB3.0,1*USB2.0,1*GE	three-tier interface
2	USB2.0/LAN	2*USB2.0,1*GE	three-tier interface
3	RS-232(1)	1*RS-232 (2*RS-232 is optional)	DB-9
4	RS-232(2)	1*RS-232 (2*RS-232 is optional)	DB-9
5	DC OUT/RS-485/GPIO	DC OUT 12V	2*DC OUT 12V
		RS-485	-
		GPIO	4*GPI , 4*GPO , with opto-couplers isolation

2.3. DC 12V OUT/RS-485/GPIO



2*9PIN 3.5mm Phoenix terminal

Silk-screen	Definition	LINUX	WINDOWS	Silk-screen	Definition	LINUX	WINDOW S
1	GND	-	-	10	GND	-	-
2	GND	-	-	11	485_B	-	-
3	DC 12V OUT	-	-	12	485_A	-	-
4	DC 12V OUT	-	-	13	GND	-	-
5	DI4	gpio5	GPI30	14	DO4	gpio9	GPO35
6	DI3	gpio4	GPI29	15	DO3	gpio8	GPO34
7	DI2	gpio3	GPI28	16	DO2	gpio7	GPO33
8	DI1	gpio1	GPI27	17	DO1	gpio6	GPO32
9	NC	-	-	18	GND	-	-

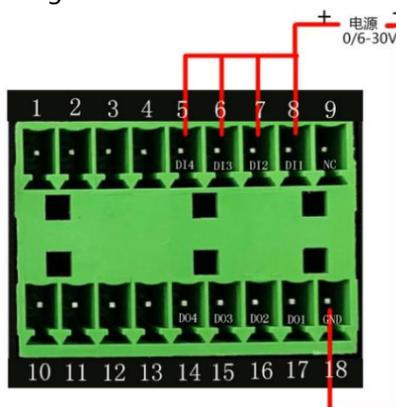
It is recommended to use 1.2A output current.

GPI: (1) The maximum input voltage is between 6V and 30V, and the input current is unlimited.

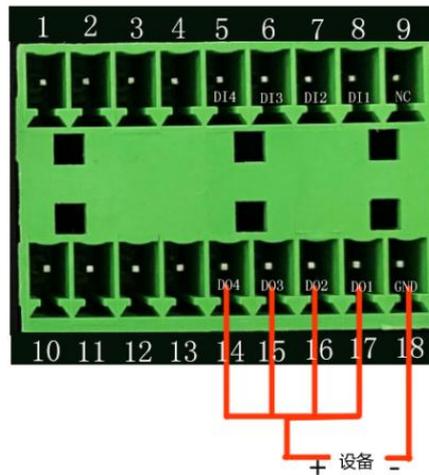
(2) The switch delay time is less than 10 due to the reverse logic circuit.

(3) It can be triggered when the power is low(0V is effective).

(4) The wiring method is shown in the figure below.

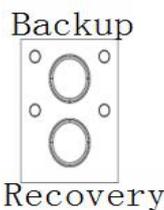


- GPO: (1)The maximum output voltage is +24V.
 (2)If the output current of each circuit is <3mA, the client side suggests adding a PNP MOS for control.
 (3)The switch delay time is less than 10 due to the reverse logic circuit.
 (4)The wiring method is shown in the figure below.



Tip: We provide GPIO routines and documentation for Windows 7/LINUX 32/64-bit systems.

2.4. Recovery & Backup



Black double-tier button

Silk-screen	Definition	Silk-screen	Definition
Backup	One-key backup button	Recovery	One-key recovery button

Notse:(1) If you want to use the one-key recovery and one-key backup function, the hard disk capacity must not be less than 64GB.

(2) Please see the attachment for backup and restore operation details.

2.5. Backup and recovery indication



Φ3 绿色 LED

Explanation: Press the backup or restore button and the green light will light up, at this point in the backup or recovery working state; When the light is off, the operation is complete.

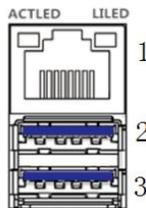
2.6. Power switch and indicator light



Round Push Button

Explanation: Press the button to turn on or off, and the button emits blue light when it is turned on.

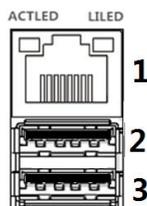
2.7. LAN/USB I



LAN/USB three-layer interface

Number	Definition	Description	Definition
1	LAN1	2	USB2.0
3	USB3.0	-	-

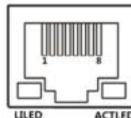
2.8. LAN/USB II



LAN/USB three-layer interface

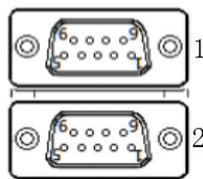
Number	Definition	Description	Remark
1	LAN2	2	USB2.0
3	USB2.0	-	-

2.9. LAN



Standard RJ45 interface

2.10. RS-232



2*DB-9

2.10.1

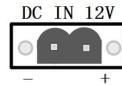
PIN	Definition	PIN	Definition
1	-	2	RXD1
3	TXD1	4	-
5	GND	6	-
7	RXD3 (reserved)	8	TXD3 (reserved)
9	GND (reserved)	-	-

2.10.2

PIN	Definition	PIN	Definition
1	-	2	RXD2
3	TXD2	4	-
5	GND	6	-
7	RXD4 (reserved)	8	TXD4 (reserved)
9	GND (reserved)	-	-

Explanation: The standard PCX-9502 set to 2*RS-232 serial ports by default, COM1 and COM2. COM3 and COM4 are reserved serial ports, which can be customized as 4*RS-232 before leaving the factory.

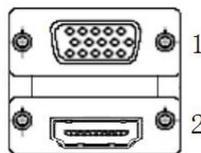
2.11. DC IN 12V



1*2PIN 5.08mm Phoenix terminal

Silk-screen	Definition	Silk-screen	Definition
-	GND	+	DC IN 12V

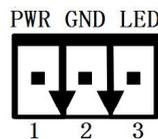
2.12. Display



VGA and HDMI

Number	Definition	Number	Definition
1	VGA	2	HDMI

2.13. PWR&LED

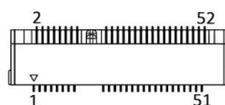


1*3PIN 3.5mm Phoenix terminal

Silk-screen	Definition	Silk-screen	Definition
1	FP_PWRBTN	2	GND
3	POWER_LED	-	-

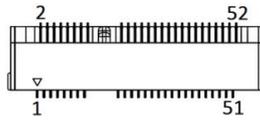
Explanation: The voltage of POWER_LED lamp is between 3.15V and 3.24V.

2.14. Storage interface



Standard MINI PCI-E interface, support MSATA

2.15. WIFI interface



Standard MINI PCI-E interface, support WIFI

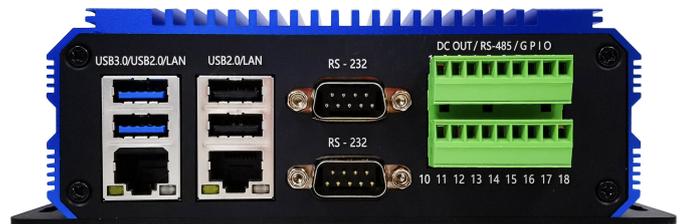
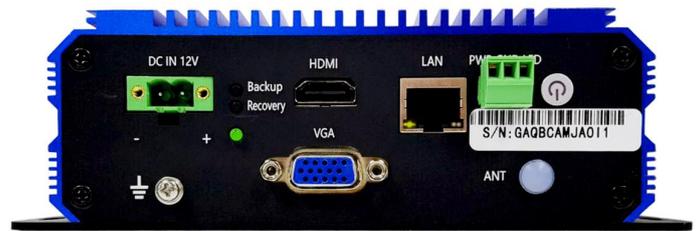
2.16. USB2.0



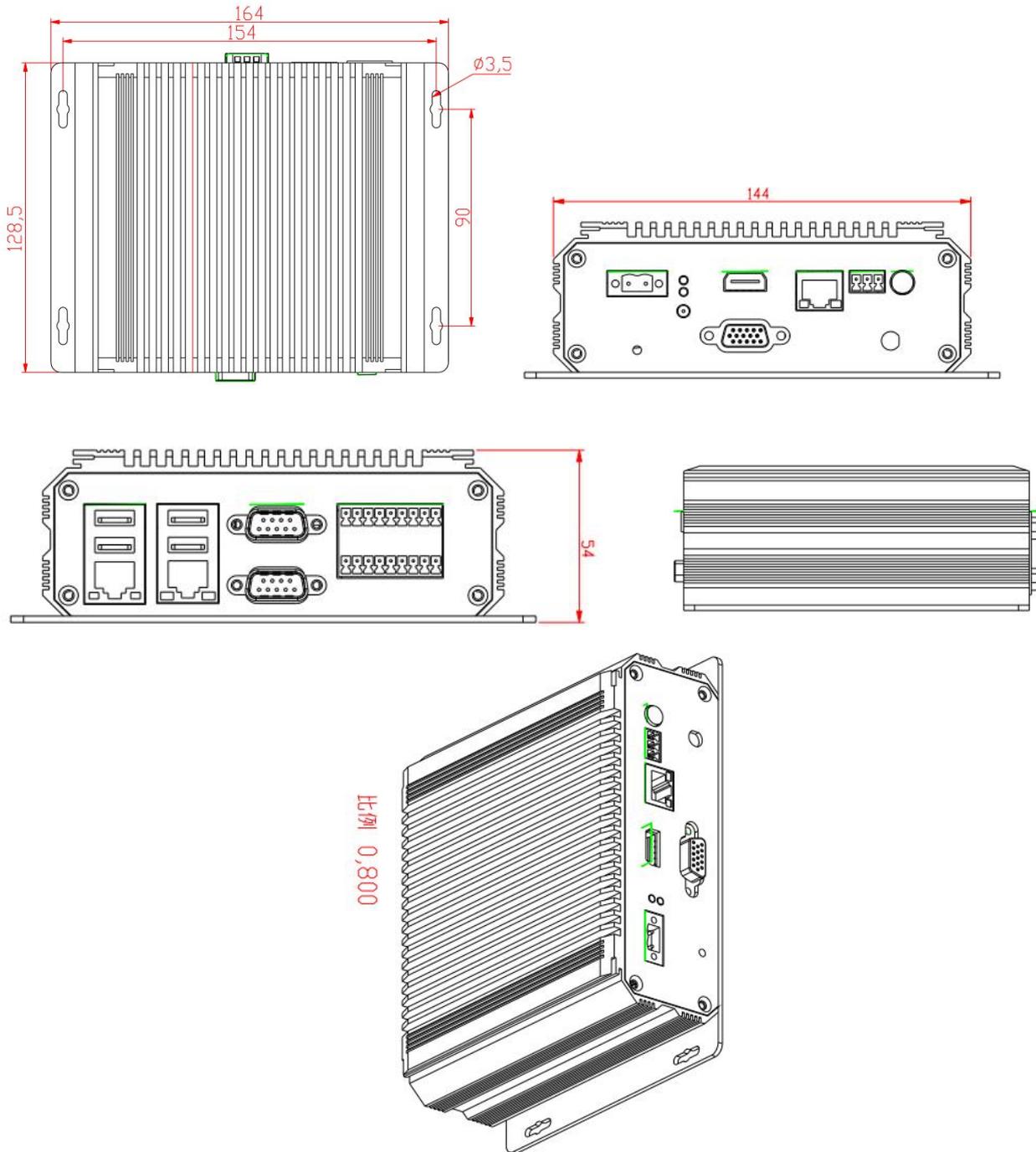
USB2.0 with black tongue

- Chapter 3 Appearance and dimensions

3.1 Appearance of PCX-9502



3.2 Dimensions of PCX-9502



• Chapter 4 Company profile

Company Name: Shenzhen lanrry technology co.LTD

Company Headquarters: Shenzhen, China

Operation Center: Beijing,Shanghai,Wuhan,Chengdu

Established Time: in 2003

Our Purpose: Build an intelligent technology platform to boost the construction of a smart earth.

Business Scope : Embedded motherboard development and sales , industrial machine development and sales , embedded intelligent system design and development.

Model Product :

Core modules,PC104 mainboard, 4.5 -inch motherboard, Mini-ITX motherboard, IPPC-Industrial Panel PCs, Fan-less embedded IPC, Industrial storage modules, Human-computer interface, Data acquisition module.

Quality System :

ISO9001 international quality certification system, CE certification system, The FCC certification system in the United States, High and low temperature testing system, Product aging test system.

Partners :

Intel, Freescale, Samsung electronics group, JAN YIN CHAN ELECTRONICS INC., Synnex Technology International, Arrow Electronics, Avnet, Nu Horizons, CECport, Element, COGO.

Typical Cstomers :

Ministry of Railways of People's Republic of China, China seismological bureau, Hong Kong Licon Group, BYD Group, Skyworth Group, China Shipbuilding Industry Group, China Electronics Technology Group, CAS(Chinese Academy of Sciences), SRIBS, THU(Tsinghua University), BUPT(Beijing University of Posts and Telecommunications), Beijing University of Technology, BUAA(Beijing University of Aeronautics and Astronautics), Jiangsu University, Nanchang Hangkong University, SCUT(South China University of Technology), SJTU(Shanghai Jiaotong University), HIT(Harbin Institute of Technology).

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Attachment:

Description of backup and recovery

1. Backup job

1.1 Backup method for keyboard F3 keys

(1) Check : ① In the process of backup and recovery, the machine is not allowed to connect to external storage devices such as USB flash disk, or there will be errors in the backup and restore operations. ② We must ensure that the hard disk capacity is not less than 64GB.

(2) After starting up, you have to press the [delete] key immediately on the keyboard continuously to enter the operation interface of backup and recovery (as shown in figure 1).

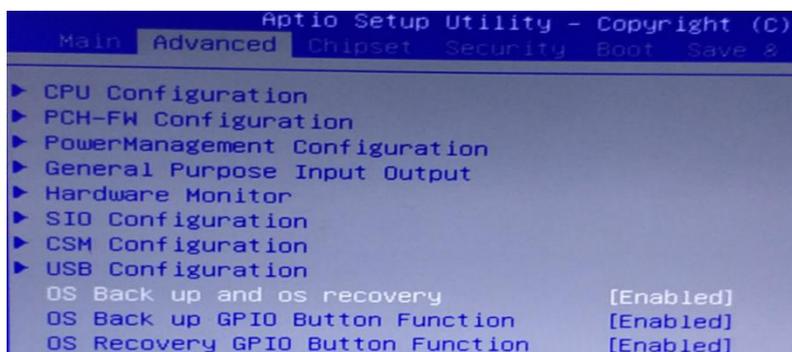


Figure 1 Operation interface

(3) Press F3 on the keyboard, and the prompt will appear: The system will be restarted and the system will be automatically backed up (as shown in figure 2). We have to use the keyboard to select [YES], enter the backup interface and start the backup. After the backup, the system will be automatically restarted.

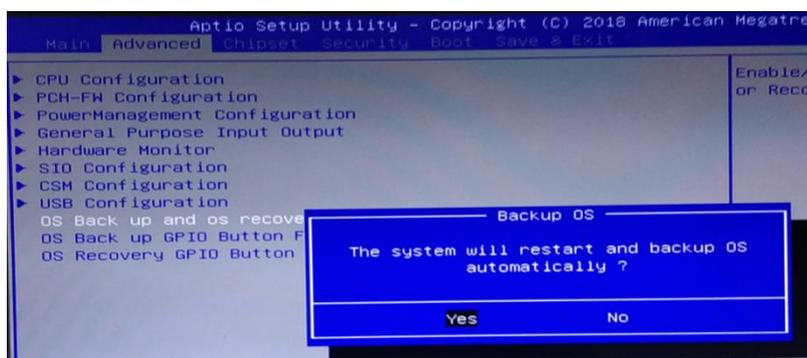


Figure 2 Backup

1.2 Backup mode of machine physical key

(1) Check : ① In the process of backup and recovery, the machine is not allowed to connect to external storage devices such as USB flash disk, or there will be errors in the backup and restore operations. ② We must ensure that the hard disk capacity is not less than 64GB.

(2) In the shutdown state, find the Backup button on the case (as shown in figure 3), then you have to press the power button until you enter the Ghost interface.

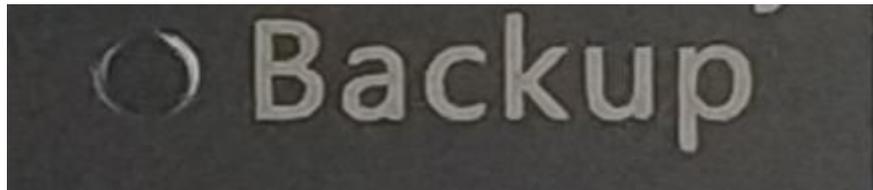


Figure 3 Backup button

(3) From now on the system is being backed up (as show in figure 4) , The system will be automatically restarted after the backup is completed.

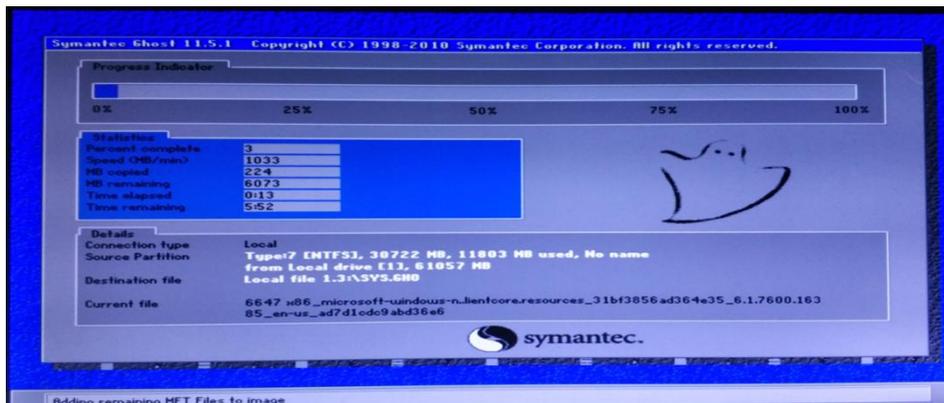


Figure 4 Backup interface

2. Recovery job

2.1 Recovery method for keyboard F4 keys

(1) Check : ① In the process of backup and recovery, the machine is not allowed to connect to external storage devices such as USB flash disk, or there will be errors in the backup and restore operations. ② We must ensure that the hard disk capacity is not less than 64GB.

(2) After starting up, you have to press the [delete] key immediately on the keyboard continuously to enter the operation interface of backup and recovery (as shown in figure 5).

(3) Press F4 on the keyboard, and the prompt will appear: The system will be restarted and the system will be automatically recovery (as shown in figure 2). We have to use the keyboard to select [YES], enter the recovery interface and start recovery. After recovery, the system will be automatically restarted.

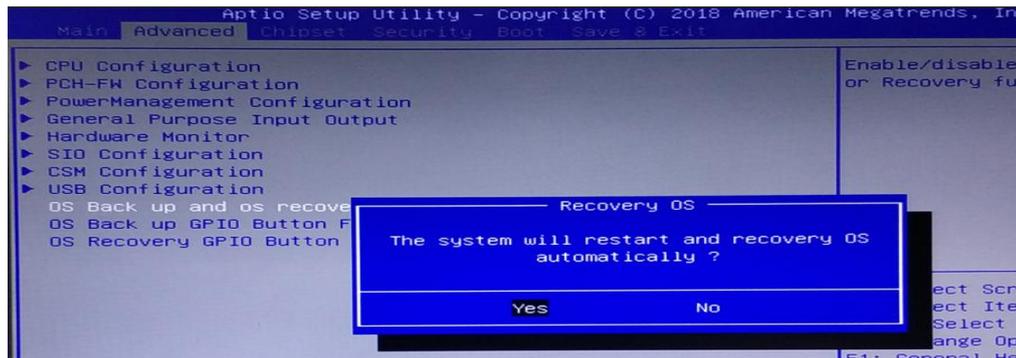


Figure 5 recovery

2.2 Recovery mode of machine physical key

(1) Check : ① In the process of backup and recovery, the machine is not allowed to connect to external storage devices such as USB flash disk, or there will be errors in the backup and restore operations. ② We must ensure that the hard disk capacity is not less than 64GB.

(2) In the shutdown state, find the Recovery button on the case (as shown in figure 6), then you have to press the power button until you enter the Ghost interface.



Figure 6 Recovery button

(3) From now on the system is being backed up (as show in figure 7) , The system will be automatically restarted after recovery is completed.



Figure 7 Recovery interface

3. Risk management

(1) In order to prevent the wrong operation, we recommend that the backup and recovery function is turned off.

Operation method:

① After press the power button, you have to press [delete] on the keyboard repeatedly and enter the Operation interface.

② Click the keyboard direction key →, Switch to the [Advanced] directory, You can see it in this directory [OS Back up and OS recovery],[OS Back up GPIO Button Function] and [OS Recovery GPIO Button Function], You need to change the three options to the [Disabled] state.

③ Press F10 to save.You can change these three options to [Enable] when you need the backup and recovery function.

(2) It is recommended that the backup and recovery operation be carried out by professionals to avoid unnecessary trouble caused by operational errors.