



**特种计算机**

**Industrial Computer**

**产品说明书**

**User Manual**

**PPC-1005**

**工业平板电脑**

**Industrial Panel PC**

**Version: C02**

## Legal Information

### Warnings

Please pay attention to the tips within the manual so as to avoid personal injury or property losses. The tips for personal injury are indicated in warning triangles while the tips only related to property losses have no warning triangles. The warning tips are listed as follows with the hazardous scale from severe to slight.

 <b>Danger</b>
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If handled carelessly, death or severe human injury will occur.
---

 <b>Warning</b>
--

If handled carelessly, death or severe human injury might occur.
--

 <b>Caution</b>
--

Warning triangle indicates that slight human injury might occur if handled carelessly.
--

<b>Note</b>
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Unexpected result or status might occur, if not handled according to the tips.
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### Professional Personnel

The product/system covered by the manual can only be handled by qualified and professional personnel. During operation, please follow the respective instructive manuals, especially the safety warnings. The professional personnel have been trained and possess relevant experiences; therefore, he/she could be aware of the risks of the product/system and avoid possible damages.

### EVOC Product

Please pay attention to the following instructions:

 <b>Warning</b>
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EVOC product can only be used according to the descriptions within the manual, including the contents and the relevant technical documents. If the products or components from other companies are required, please get the recommendation and grant from EVOC first. Proper transportation, storage, assembly, installation, debugging, operation and maintenance are prerequisite to ensure product safety and normal operation; therefore, please ensure permitted environment conditions and pay attention to the tips within the manual.
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## **Copyright Notice**

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## **Warranty Terms:**

The warranty on the product lasts for one year. If the user has additional requirements, the contract signed between the two sides shall prevail.

**Please visit our website: <http://www.evoc.com> for more information,**

**Or send an email to the Technical Support Mailbox [support@evoc.com](mailto:support@evoc.com) (International) or [support@evoc.cn](mailto:support@evoc.cn) (Domestic) for consultation.**

**Hotline: 4008809666**

## **About this manual**

### **Scope of the Manual**


The manual is appropriate for EVOC PPC-1005.

### **Convention**

The term “the PC” or “the Product” within the manual usually stands for EVOC PPC-1005.

### **Instructions**

Safety instructions

To avoid property losses or individual injury, please pay attention to the safety instructions within the manual. The warnings within the manual are marked with warning triangle , whose existence is dependent upon the scale of the potential hazard.

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## 1. Product Introduction

### 1.1 Overview

PPC-1005 is a fanless low power industrial panel PC, which contains AMD LX800 low-power CPU, and supports Windows XP and Windows XPE operating systems.

Made of aluminum alloy, the PC features simple structure, excellent dust-proof, heat dissipation, anti-vibration and EMC performance. It also provides high reliability and strong environmental adaptability.

PPC-1005 is tailored for the industrial automation industry, especially the wind power industry. Most of its communication connectors adopt isolation design.

### 1.2 Product Specifications

	Item	Definition
Main Functional Index	Microprocessor	Onboard AMD Geode LX800/500MHz
	Chipset	AMD Geode CS5536
	Memory	Onboard 256MB DDR memory
	Display	24bit LVDS; the maximum resolution supported is 800×600@60Hz
	Network	1 x 10/100Mbps Base-T LAN port

<b>LCD Features</b>	<ul style="list-style-type: none"> <li>➤ LCD: 10.4" TFT wide temperature LCD</li> <li>➤ Port: LVDS</li> <li>➤ Resolution: 800*600</li> <li>➤ Luminance: 400cd/m2</li> <li>➤ Contrast ratio: 700: 1</li> </ul> <p><b>Note:</b> There are great differences between wide temperature LCD and normal temperature LCD regarding liquid crystal material and driver IC. The wide temperature LCD screen can be used in high/low temperature for a long time, and no permanent damage will appear on the screen, such as bright spot and dim spot. As for the circuit, the driver IC (Gate IC, Source IC) selected by wide temperature LCD screen and TCON IC on the P board are wide temperature material.</p> <p><b>Note:</b> Because the viscosity coefficient of liquid crystal will become larger when the temperature goes down, and the response of liquid crystal will become slower when the temperature is low, thus causing lagging shadow. This problem will disappear when the temperature goes up.</p> <p>The product can be normally used under low temperature, and no permanent damage will be caused to the screen.</p>
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	<b>Touch Screen</b>	<ul style="list-style-type: none"> <li>➤ Type: 5-wire resistive</li> <li>➤ Surface hardness: 3H</li> <li>➤ Port: USB</li> <li>➤ Life: 1 million clicks</li> </ul>
	<b>External IO Ports</b>	<ul style="list-style-type: none"> <li>➤ 1 x 10/100Mbps Base-T LAN port</li> <li>➤ One 6Pin terminal-type power connector;</li> <li>➤ One CF card slot, with 4G industrial CF card as standard configuration;</li> <li>➤ Two USB TYPE-A connectors;</li> <li>➤ Three 3-wire isolated serial ports</li> <li>➤ Two 16-bit coding switches;</li> <li>➤ One PS/2 keyboard/mouse port;</li> </ul>
<b>Main Performance Index</b>	<b>Dimensions</b>	270mm(L) x 215mm(W) x 49.4mm(H)
	<b>Weight</b>	2.8Kg
	<b>Temperature</b>	<ul style="list-style-type: none"> <li>➤ Operating temperature: -30℃~60℃</li> <li>➤ Storage temperature: -40℃~85℃</li> </ul>
	<b>Humidity</b>	5%~95% (Non-condensing)

<p style="text-align: center;"><b>EMC</b></p>	<ul style="list-style-type: none"> <li>➤ GB 9254-2008 Radiation disturbance, class A;</li> <li>➤ GB 9254-2008 Conducted disturbance class A;</li> <li>➤ GB/T 17626.2.2006 Electrostatic discharge, level 3;</li> <li>➤ GB/T 17626.4-2006 Burst Immunity, level 3;</li> <li>➤ GB/T 17626.5-2008 Surge immunity, level 3;</li> <li>➤ GB/T 17626.6-2008 Conducted susceptibility, level 3;</li> <li>➤ GB/T 17626.3-2008 Radiation immunity, level 3;</li> <li>➤ GB/T 17626.7-2008 Harmonic current;</li> <li>➤ GB/T 17626.11-2008 Voltage dips and short supply interruption.</li> </ul>
<p style="text-align: center;"><b>Reliability</b></p>	<ul style="list-style-type: none"> <li>➤ MTBF<math>\geq</math>45000h</li> <li>➤ MTTR<math>\leq</math>0.5h</li> </ul>
<p style="text-align: center;"><b>Safety</b></p>	<p>Meets the basic requirements of GB4943;</p>
<p style="text-align: center;"><b>Mechanical and Environmental</b></p>	<ul style="list-style-type: none"> <li>➤ Anti-vibration: frequency (17-200Hz); acceleration (1G); amplitude (1mm)</li> <li>➤ Anti-shock: 10G acceleration, 11ms duration;</li> <li>➤ Noise: (0) dB</li> </ul>
<p style="text-align: center;"><b>Power Features</b></p>	<ul style="list-style-type: none"> <li>➤ Input reverse polarity protection, over-voltage protection (auto-recovery)</li> <li>➤ Output short circuit protection;</li> <li>➤ The power is an isolation power with 500V DC withstand voltage;</li> <li>➤ Power Input Range: 16V-32V(0.7U-1.3U, U=24V);</li> <li>➤ Overvoltage Protection: the system operates normally (U=24V), when the voltage is between 1.3U and 1.4U and the duration is less than 10ms.</li> <li>➤ Power consumption of the PC: 14.2W (standby status); Power consumption of the PC: 15.5W (Burnintest V5.3 100%)</li> </ul>

## 2. Application Scheme

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### 2.1 Transportation

During transshipping, products should not be stored in open air without protection from the atmospheric conditions. Products should not be transported together with inflammable, explosive and corrosive substances and are not allowed to be exposed to rain, snow and liquid substances and mechanical force.

### 2.2 Storage

Products should be stored in package box when it is not used. And warehouse temperature should be 0°C ~ 40°C, and relative humidity should be 20% ~ 85%. In the warehouse, there should be no harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field interference. The package box should be at least 10cm above ground, and 50cm away from wall, thermal source, window and air inlet.

<b>Caution!</b>
<b>Risk of destroying the device!</b>
<b>When shipping the PC in cold weather, please pay attention to the extreme temperature variation. Under this circumstance, please make sure no water drop (condensation) is formed on the surface or interior of the device. If condensation is formed on the device, please wait for over twelve hours before connecting the device.</b>

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## 2.3 Opening the Box and Initial Examination

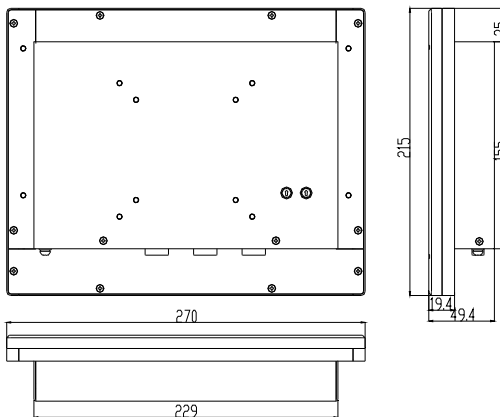
### Opening the Box

Please pay attention to the following issues when opening the box:

- Do not discard the original packing material. Please keep the original packing material for re-transportation.
- Please keep the documentation at a safe place. The documentation, which is a part of the device, is required for initial device debugging.
- When doing the initial examination, please check whether there are distinct damages to the device caused during the transport.
- Please check whether the delivery contains the intact device and all of the independently ordered accessories. Please contact the customer service when any unconformity or transportation damages occur.

### 3. Installation Instructions

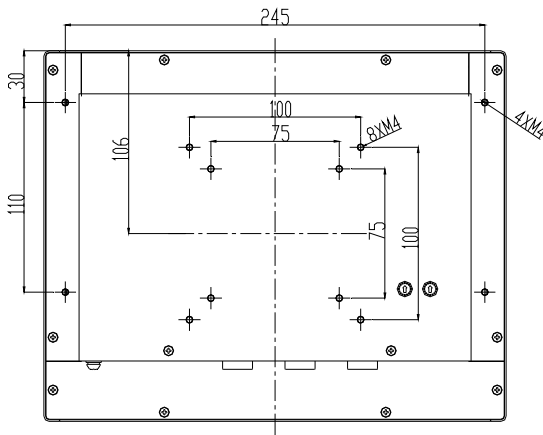
#### 3.1 Product Dimensions Drawing



Unit: mm

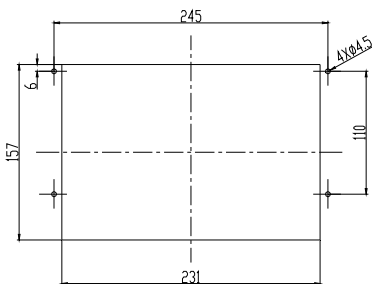
#### 3.2 Installation Dimensions

##### 3.2.1 Installation Dimensions Drawing



Unit: mm

### 3.2.2 Recommended Hole Dimensions for Embedded Panel Installation



Unit: mm

### 3.3 Mounting Method

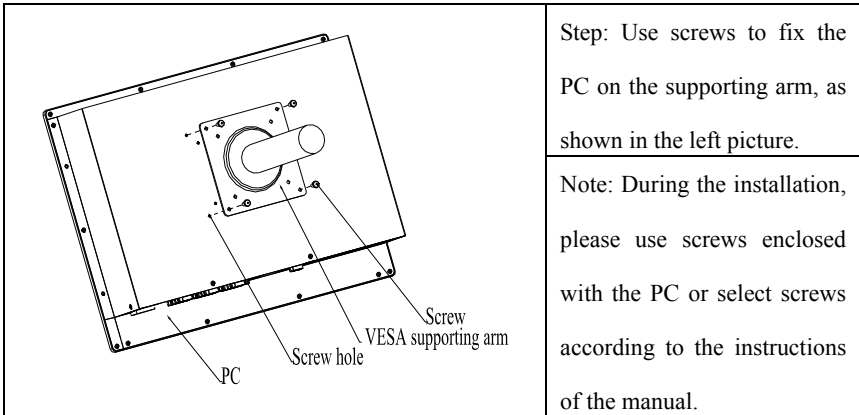
- 19" Rack Mount       Desktop       Embedded Panel  
 Wall Mount       VESA Standard Arm       Portable  
 Others \_\_\_\_\_

#### 3.3.1 Installation of Embedded Panel

	<p>Step 1: As shown in the left figure, place the PC onto the panel while aligning the installation holes.</p>
	<p>Step 2: As shown in the left figure, drive screws into the installation holes on the panel and fasten the PC.</p> <p>Note: During the installation, please use screws enclosed with the PC or select screws according to the instructions of the manual.</p>

**Important note:**

**When installing the embedded panel, M4X6 screws enclosed with the PC must be used, otherwise internal components of the PC might be damaged!**

**3.3.2 VESA Standard Supporting Arm Mounting****Important note:**

**When VESA arm mounting method is adopted, M4X10 screws enclosed with the PC must be used, otherwise internal components of the PC might be damaged!**

**Warning**

The weight bearing capacity of VESA arm shall be at least twice the weight of the PC.

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## 4. Device Connection

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### 4.1 Notices before Connection

 <b>Warning</b>
--

The connected or built-in peripherals with opposite polarities are not allowed.
---

 <b>Warning</b>
--

The device only operates when connecting with grounded power. No operation is allowed when the device power is ungrounded or only impedance is grounded.
--

 <b>Warning</b>
--

Rated voltage of the device in use shall be in accord with power feature of the product.
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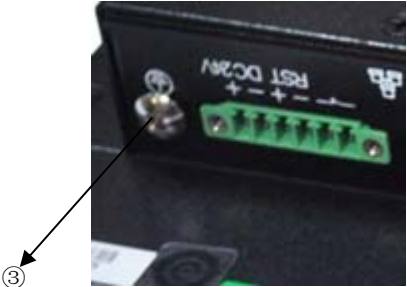
<b>Note:</b>
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Only the peripheral devices approved for industrial application can be used. When operating the PC, hot swappable IO modules (USB) can be used. The IO devices without hot swap function can only be connected when the PC is powered off.
--


### 4.2 Product Grounding

Ground connection is more helpful to release the interference produced by the external cables, the signal cables or the cables connecting the IO module to the grounding system.



<b>Ground Terminals</b>	
<p>The grounding terminal ① on the device (large surface or large area contact) shall be connected with the cabinet installed with the PC or the central grounding busbar on the device. The minimum cross section area of the cable shall be no less than 5mm<sup>2</sup>.</p>	

### 4.3 Connecting the Device to Power

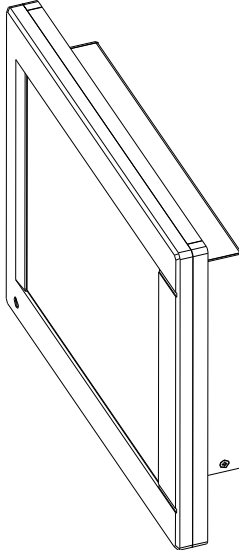
Steps to connect the device to power:	
<p>Connect the PC to the power supply by connector ②, to power on the PC.</p>	

<p><b>⚠ Danger</b></p>
<p>Disconnect the power source and data cable during a lightning storm.</p>

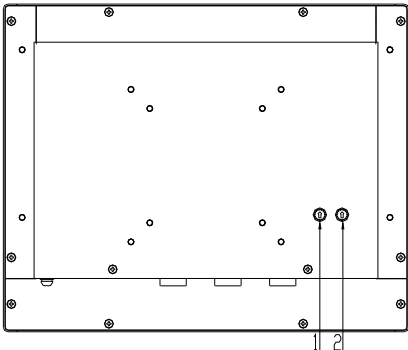
<p><b>Attention</b></p>
<p>The PC is completely isolated from the power supply only by disconnecting the power connector.</p>

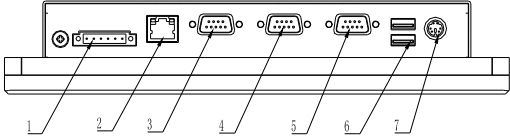
## 5. Operating Instructions

### 5.1 Product Outline



### 5.2 External Control Ports

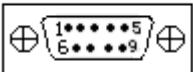
Ports on the back of the PC		Item	Description
	1	Encoder switch ID1	
	2	Encoder switch ID2	

Ports at the bottom of the PC	Item	Description
	1	Power connector
	2	LAN port
	3	COM1
	4	COM2
	5	COM3
	6	USB port
	7	Keyboard/mouse port

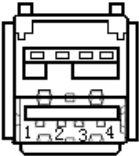
### 5.3 Pin Definitions

#### 5.3.1 COM Ports

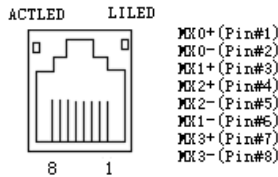
The COM ports adopt DB9 connector. COM1, COM3 only support RS-232. COM2 is RS-485 mode. Their pin definitions are as follows:

 COM1, COM2, COM3	Pin	Signal Name	
		RS-232	RS-485
	1	NC	Data-
	2	RXD	Data+
	3	TXD	NC
	4	NC	NC
	5	REF GND	REF GND
	6	NC	NC
	7	NC	NC
	8	NC	NC
	9	NC	NC

### 5.3.2 USB Ports

 USB1-2	Pin	Signal Name
	1	+5V
	2	USB_Data-
	3	USB_Data+
	4	GND


### 5.3.3 LAN Ports



ACTLED (single color: green)	Network Activity	LILED (two colors: yellow and green)	Network Speed
Flash	Data being	Yellow	100Mbps
Off	No data being	Off	10Mbps

### 5.3.4 Power Input Connector

The power input is provided by a 6Pin terminal-type power connector. Its pin definitions are as follows:

	Pin	Signal Name	Pin	Signal Name
	1	V+	2	V-
	3	Reset+	4	Reset-
	5	State In	6	State Out

Notes: 1. V+ and V- refer to the input pins of DC voltage;

2. Reset+ and Reset- are remote reset pins. When 24V voltage is applied between Reset+ and Reset- for more than 0.5s, the system is reset.

3. State In and State Out are power failure alarm pins, which adopt Normal Close design. When the system is operating normally, State In and State Out are disconnected; when the system is cut off from power, State In and State Out are closed. The node voltage is no more than 50V, and the current should be no more than 1A.

### 5.3.5 Encoding Table of Encoder Switch ID1, ID2



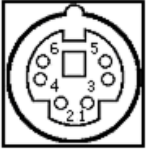
16-bit encoder switch: 0-F

ID2	GPI07	GPI06	GPI05	GPI04	ID1	GPI03	GPI02	GPI01	GPI00
0	0	0	0	0	0	0	0	0	0
1	0	0	0	1	1	0	0	0	1
2	0	0	1	0	2	0	0	1	0
3									
4									
5									
6									
7									
8									
9...	...	...	...	...	...	...	...	...	...
A									
B									
C									
D									
E	1	1	1	0	E	1	1	1	0
F	1	1	1	1	F	1	1	1	1

Note: ID encoder switch can be adjusted by small screw driver. Application software can read actual ID encoder value via the GPIO port. Please refer to the software part for the details about reading method of GPIO software.

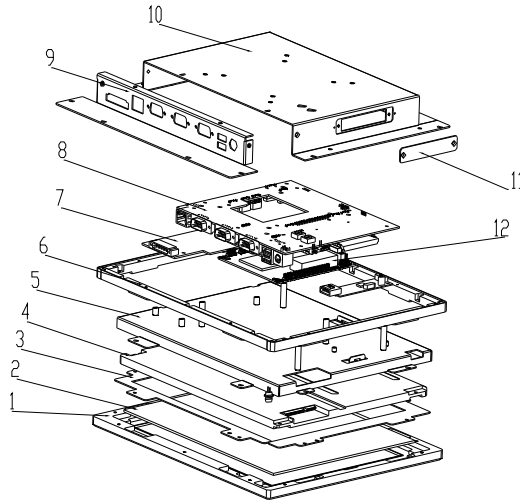
### 5.3.6 PS/2 Keyboard/Mouse Port

The product adopts a standard 2-in-1 PS/2 port.

 <p style="text-align: center;">KM1</p>	<b>Pin</b>	<b>Signal Name</b>
	1	KB_DATA
	2	MS_DATA
	3	GND
	4	+5V
	5	KB_CLK
	6	MS_CLK

## 6. Assembly and Maintenance

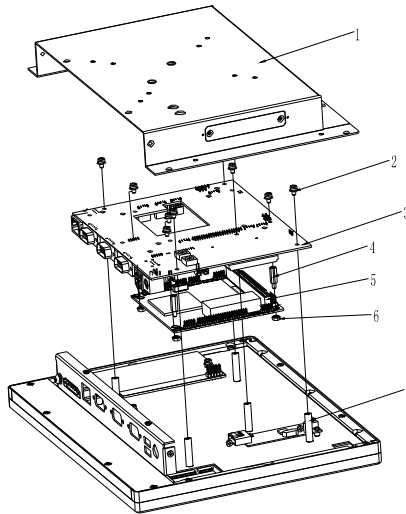
### 6.1 Overall Assembly



Item	Description	Item	Description	Item	Description
1	Al-alloy panel	2	Touch screen	3	Presser plate for touch screen
4	LCD screen	5	Screen bracket	6	Panel bracket
7	Power board	8	IO board	9	Lower side panel
10	Chassis cover	11	CF card cover	12	Motherboard

## 6.2 Removal and Installation of the Motherboard

### 6.2.1 Installing the Motherboard

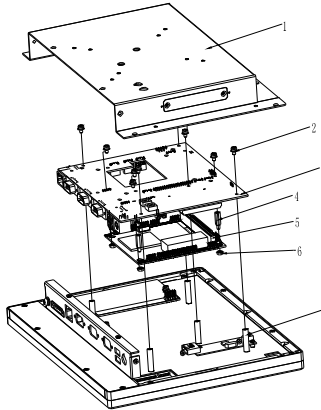


Item	Description	Item	Description	Item	Description
1	Chassis cover	2	Screw	3	IO board
4	Hexagon screw	5	Motherboard	6	Nut
7	Self-clinching bolt				

- 1、 By the direction shown in the picture, install hexagon screws into the four installation holes of the motherboard, then tighten the nuts;
- 2、 Insert the motherboard onto the IO board according to the direction of connectors, then tighten the screws;
- 3、 By the direction shown in the picture, align the installation holes of IO board assembly with self-clinching bolts, then tighten them with screws;
- 4、 Close the chassis cover, and fix it with screws.

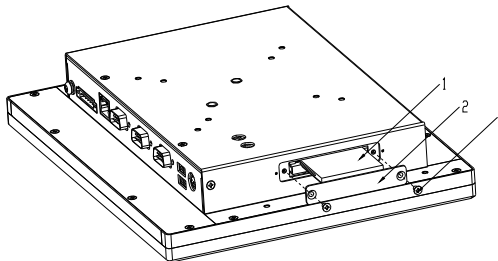


## 6.2.2 Removing the Motherboard



- 1、 Loosen the screws on the chassis cover and remove it, as shown in the above figure;
- 2、 Loosen the screws fixing IO board assembly, and remove it;
- 3、 Loosen the screws fixing the motherboard, and remove it.

## 6.3 CF Card Installation



Item	Description	Item	Description	Item	Description
1	CF card	2	CF card cover	3	Screw

1. Loosen the screws and remove the CF card cover;
2. Insert the CF card into the corresponding slot, close the CF card cover and tighten the screws.

---

## 7. Installing the Drivers

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Regarding the installation of the driver program and the detailed information of the motherboard, please refer to the enclosed CD of the PC.

Note: COM1, COM3 are RS-232, COM2 is RS-485 mode. COM3 is a USB-chip-to-COM-RS-232, which requires manual installation of the driver. After installing the COM port driver, uninstall the device in the Device Manager, press the “Scan For Hardware Change” button again, then the driver will be automatically loaded.

## 8. Appendix

### 8.1 Troubleshooting and Solutions

Common Malfunctions	Reasons	Troubleshooting and Solution
The device cannot operate.	There is no power supply or the voltage is too low.	Please check the power supply and the power cable/connector, and check whether the output voltage is within the supported range.
	The power voltage is too high, so that the PC is in a state of over-voltage protection.	When the indicator on the front panel is flashing, please check the power output.
	Improper device operating environment.	<ol style="list-style-type: none"> <li>1. Check with the environment conditions;</li> <li>2. Please wait for twelve hours before powering on the device shipped in cold weather.</li> </ol>
The external display monitor is black.	The power supply for display monitor has not been turned on.	Please turn on the power supply for display monitor.
	The display is under “power saving” mode.	Press any key on the keyboard.
	The luminance control is set to “Black”.	Increase the screen luminance by luminance control. Please refer to the instructions of the display for detailed information.

	Power cable or display cable is not connected.	<ol style="list-style-type: none"> <li>1. Please check whether the power cable is correctly connected with the display, the system unit or the ground port.</li> <li>2. Please check whether the display cable is correctly connected with the display and the system unit.</li> <li>3. Contact Technique Support if the screen remains black after implementing the above measures.</li> </ol>
Incorrect time or date on PC.	Incorrect BIOS setting.	Follow the power-on prompt and press the key to enter the BIOS Setup; adjust the time and date in BIOS Setup.
BIOS setting is correct while the time and date are incorrect.	Insufficient backup battery capacity.	Replace the battery
USB device has no response.	USB port is disabled in BIOS.	Use other USB ports or enable that port.
	USB 2.0 device is connected; however, USB 2.0 is disabled.	Enable USB 2.0.
	USB port is not supported by the operating system.	<ol style="list-style-type: none"> <li>1. Enable USB Legacy Support for the mouse and keyboard (Legacy USB is supported);</li> <li>2. For other devices, appropriate USB drivers are required.</li> </ol>
The computer is not booted or displays “Boot device not found”.	In booting priority of the BIOS setting, the device is not the first priority or the device is not included in the booting device.	Modify the booting priority of the device in the Boot menu of BIOS setting or include that device into the booting priority.

No system disk can be found when powering on.	The HDD power cable or data cable is not connected well.	Check whether the power cable and the data cable of the hard disk (the hard disk shall be installed with operating system and is bootable) are well connected.
	System files on the hard disk are damaged.	Enter the system (usually WinPE system) with a bootable disk; check whether the system in the hard disk is damaged. Reinstall the system if necessary.