



特种计算机

Industrial Computer

产品说明书

User Manual

IPC-820

4U 上架机箱

4U Rack-mount Chassis

Version:C02

法律资讯

警告提示

为了您的人身安全以及避免财产损失，必须注意本手册中的提示。人身安全的提示用一个警告三角表示，仅与财产损失有关的提示不带警告三角。警告提示根据危险等级由高到低如下表示。

 危险
表示如果不采取相应的小心措施，将会导致死亡或者严重的人身伤害。
 警告
表示如果不采取相应的小心措施，可能导致死亡或者严重的人身伤害。
 小心
带有警告三角，表示如果不采取相应的小心措施，可能导致轻微的人身伤害。
注意
表示如果不注意相应的提示，可能会出现不希望的结果或状态。

合格的专业人员

本文件所属的产品/系统只允许由符合各项工作要求的合格人员进行操作。其操作必须遵照各自附带的文件说明，特别是其中的安全及警告提示。由于具备相关培训及经验，合格人员可以察觉本产品/系统的风险，并避免可能的危险。

EVOC产品

请注意下列说明：

 警告
EVOC产品只允许用于目录和相关技术文件中规定的使用情况。如果要使用其他公司的产品和组件，必须得到EVOC推荐和允许。正确的运输、储存、组装、装配、安装、调试、操作和维护是产品安全、正常运行的前提。必须保证允许的环境条件。必须注意相关文件中的提示。



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订购产品前，请向经销商详细了解产品性能是否符合您的需求。

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保修条款：

产品保修期一年。用户如另有要求，以双方签署的合同为准。

欲获更多信息请访问：

研祥网站：<http://www.evoc.com>

研祥技术支持邮箱：support@evoc.com（国际）、support@evoc.cn（国内）

免费客服热线： 4008809666

文档说明

本文档适用范围

本文档适用于EVOC IPC-820型号。

约定

在本文档中，术语“整机”或“产品”有时特指EVOC IPC-820产品。

说明

安全相关注意事项

为避免财产损失以及出于个人安全方面的原因，请注意本入门指南中关于安全方面的信息。文中使用警告三角来指示这些安全信息，警告三角的出现取决于潜在危险的程度。

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1. 产品介绍

1.1 产品概述

IPC-820 是一款 4U 上架机箱，可以兼容公司 FSC、EPI、EPE、EC9、ECO 等各类全系列全长卡和工业主板，内置高速进风风扇；具有良好的散热、抗振、EMC 性能。

本产品结构合理，设计先进，前面板采用钣金造型，主机体为优质钢板成型，双压条结构，可有效固定主板重心位置；机箱、门板一体化带锁保护系统，也可避免非授权人员的入侵。

IPC-820 可广泛应用于通信、网络、金融、电力、交通、工业自动化等各领域。

1.2 产品规格

项目		定义
主要性能指标	扩展性能	● 可安装主板：PICMG 1.0 标准全长卡，PICMG 1.3 标准全长卡，EPI 2.0 标准全长卡，EPE 标准全长卡，EC9 标准单板，ECO 标准单板； ● 可安装底板：10 槽标准 PICMG 1.0 底板，14 槽标准 PICMG 1.0 底板，10 槽标准 PICMG 1.3 底板，13 槽标准 EPI 2.0 底板，10 槽标准 EPE 底板； ● 可安装电源：标准 PS2 ATX 电源，标准 PS2 AT 电源；
	存储扩展	● 1 个 5.25" CD-ROM 空间 ● 2 个 3.5" HDD 空间（做减震） ● 1 个 3.5" HDD 空间（不做减震）

机箱自带接口及按键	- 前置 2 个 USB 2.0 接口 - ATX 开关、复位开关，电源、硬盘指示灯，带锁安全门
外形尺寸 (不含挂耳)	482 mm (宽) × 177 mm (高) × 470.4 mm (深)
净重	净重: 15.3Kg;
温度	- 工作温度: 0℃ ~ 50℃ - 存储温度: -20℃ ~ 60℃
湿度	5 % ~ 90 % (非凝结状态)
电磁兼容性	- GB 9254-2008, 辐射骚扰 (A) 级, 传导骚扰 (A) 级 - GB/T 17626.2-2006 静电接触放电 (2) 级 - GB/T 17626.4-2008 脉冲群抗扰度 (2) 级 - GB/T 17626.6-2008 传导抗扰度 (2) 级 - GB/T 17626.5-2008 浪涌 (冲击) 抗扰度 (2) 级 - GB/T 17626.6-2008 传导抗扰度 (2) 级
可靠性	- 平均无故障工作时间: MTBF ≥ 50000h - 平均维修时间: MTTR ≤ 0.5h
安全性	满足 GB4943 的基本要求
机械环境适应性	- 抗振动: 5-17Hz/1.0mm 振幅; 17-200Hz/1.0g 加速度 - 抗冲击: 10g 加速度, 11ms 周期
电源特性	输入电压/频率: 220VAC/50Hz

1.3 状态监控介绍及规格

一、基本功能

- 1、 CPU 运行温度显示；
- 2、 系统运行温度显示；
- 3、 电源指示功能；
- 4、 可单独设定 CPU 或系统超上限温度报警；
- 5、 温度测量范围：CPU $-10^{\circ}\text{C}\sim 110^{\circ}\text{C}$ SYSTEM $-40^{\circ}\text{C}\sim 80^{\circ}\text{C}$ ；
- 6、 温度采样时间 3 秒；
- 7、 掉电可以记忆设定数据；
- 8、 温度超出测量范围或 sensor 出错（开、短路）自动提醒用户。

二、按键设计

【SET】进入设置状态/切换设置对象

【UP】上调设定数值，每按一次设定值增加 5°C

【DOWN】下调设定数值，每按一次设定值减少 5°C

三、操作方式

按【SET】，进入设定状态，默认 CPU 设定温度 75°C ，进入设定温度后，温度数值以 1HZ 闪烁，按【UP】上调设定数值，每按键一次增加 5°C ，按【DOWN】下调设定数值，每按键一次减少 5°C 。

再按【SET】切换到 SYSTEM 报警温度设置，SYSTEM 温度闪烁，

默认设定温度为 55°C ，进入设定温度后，温度数值以 1HZ 闪烁，按【UP】上调设定数值，每按键一次增加 5°C ，按【DOWN】下调设定数值，每按键一次减少 5°C 。

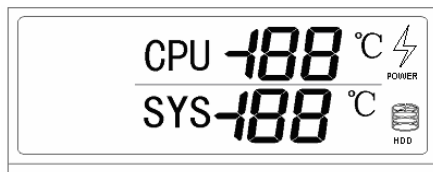
设定时不显示小数点及小数点后数值。

【SET】退出设置状态，显示当前 CPU 和 SYSTEM 温度值，温度超出测量范围或 sensor 出错（开、短路）时显示“—”。

四、超温报警功能

当实际温度超出设定温度值时，蜂鸣器报警三声，然后停止，报警同时 LCD 显示并闪烁当前温度值三次（1HZ 闪烁）然后显示设定温度值 2 秒，一直循环，直到温度恢复到设定温度点以下，LCD 恢复显示正常温度值。

五、规格要求



*当硬盘转动时，LCD 上 HDD 图形标识会随硬盘转动而显示转动效果。

*设有 RESET 键，当 CPU 未正常工作或出现异常，可以通过 RESET 使其复位。

2. 应用规划

2.1 运输

包装好的产品能以任何交通工具，运往任何地点，在长途运输时不得装在敞开的船舱和车厢中，中途转运时不得存放在露天仓库中，在运输过程中不允许和易燃、易爆、易腐蚀的物品同车（或其他运输工具）装运，并且产品不允许经受雨、雪或液体物质的淋湿与机械损坏。

2.2 贮存

产品贮存时应存放在原包装箱内，存放产品的仓库环境温度为 0℃～40℃，相对湿度为 20%～85%。仓库内不允许有各种有害气体、易燃、易爆炸的产品及有腐蚀性的化学物品，并且无强烈的机械振动、冲击和强磁场作用。包装箱应垫离地面至少 10cm，距离墙壁、热源、冷源、窗口或空气入口至少 50cm。

小心

损坏设备的风险！

在寒冷天气状况下运输 PC 时，应注意温度的极端变化。 这种情况下，请确保设备上或设备内部没有形成水滴（凝露）。如果设备上形成了凝露，请在接通设备前至少等待 12 个小时。

2.3 开箱及检查交付的设备

设备开箱

设备开箱时请注意以下几点：

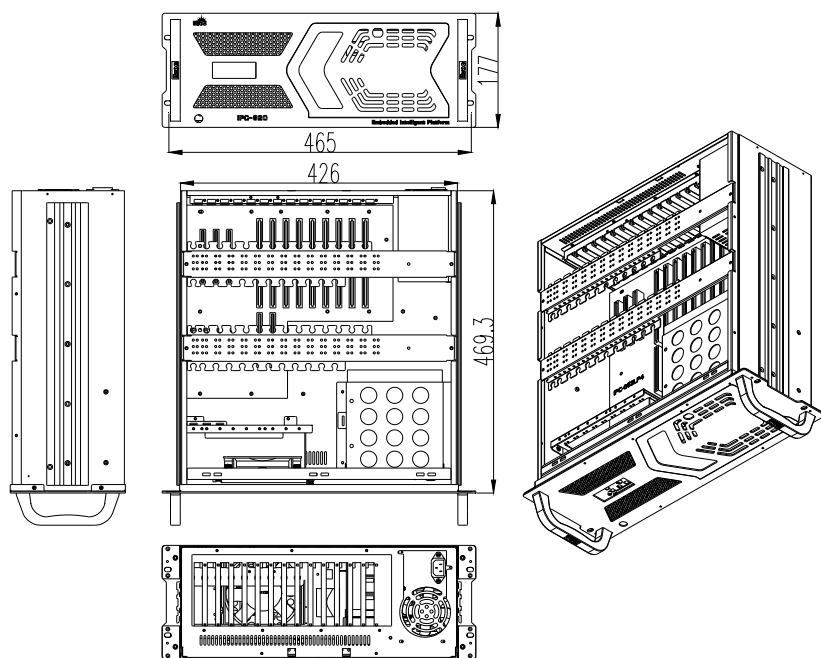
- 建议您不要丢弃原包装材料。 请保留原包装材料以备再次运输设备时使用。
- 请将文档存放在安全的地方。 初始调试设备时需用到该文档，并且它是设备的一部分。
- 检查交付的设备，查看是否在运输途中造成了任何明显的损坏。
- 验证所运货物是否包含完整的设备以及您单独订购的附件。 如有任何不符或存在运输损坏，请联系客户服务人员。

3. 产品安装说明

3.1 安装方式

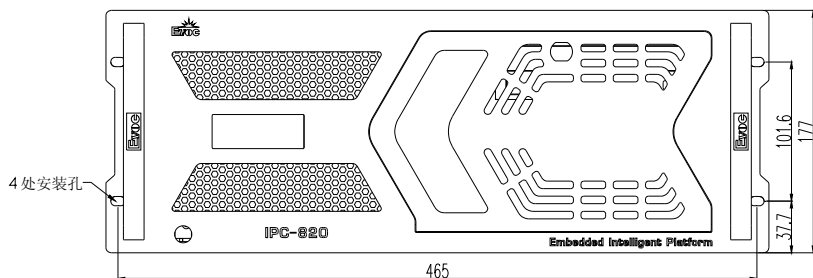
- ☒ 19" 上架式 ☐ 桌面式（台面式） ☐ 嵌入面板式
☐ 壁挂式 ☐ VESA 标准支撑臂 ☐ 手提便携式
☐ 其他方式_____

3.2 产品外形尺寸图



单位：mm

3.3 产品安装尺寸图



安装方法：用 M5 或 M6 的面板螺钉配合 M5 或 M6 的浮动螺母安装在标准 19 寸机柜上。

4. 设备连接

4.1 连接前的注意事项

警告

所连接或内置的外围设备不得接入极性相反的设备。

警告

本设备只能在接地电源网络上运行。禁止在未接地或阻抗接地的电源网络上进行操作。

警告

使用的设备额定电压必须符合本产品电源特性。

注意

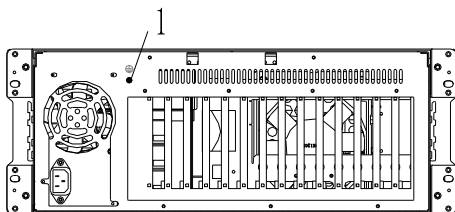
只能连接经认可适合工业应用的外围设备。PC 运行时，可以连接热插拔 I/O 模块（USB）。无热插拔功能的 I/O 设备只能在设备断开电源后进行连接。

4.2 产品接地

低阻抗接地连接更有助于将外部电缆、信号电缆或连接 I/O 模块的电缆所生成的干扰释放到接地系统。

接地端子

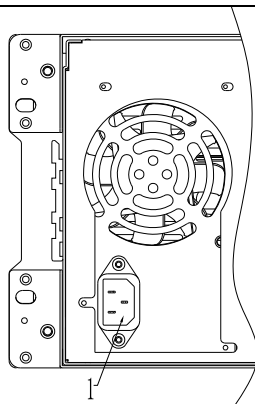
设备上的接地端子“1”必须与安装有 PC 的机柜或设备的中央接地母线连接。最小导线横截面不能小于 5mm^2 ，接地电阻最大不能大于 $0.1\ \Omega$ 。



4.3 将设备连接到电源

将设备连接到电源的步骤

将电源线连接到接口1，按前面板电源开关，设备启动。



危险

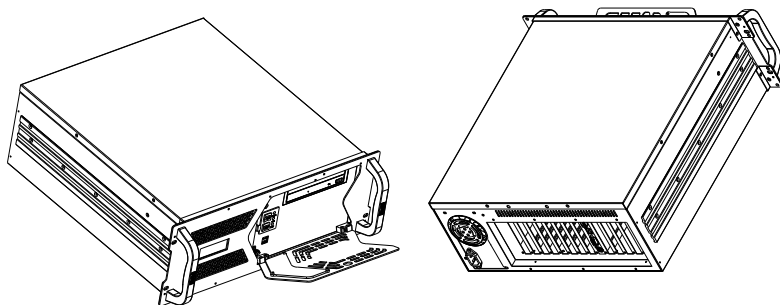
雷暴雨期间断开电源和数据电缆。

注意

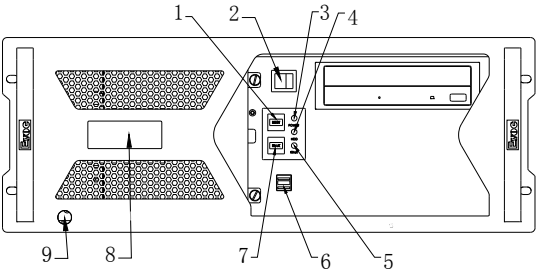
必须断开电源连接器才能将设备与电源完全隔离。

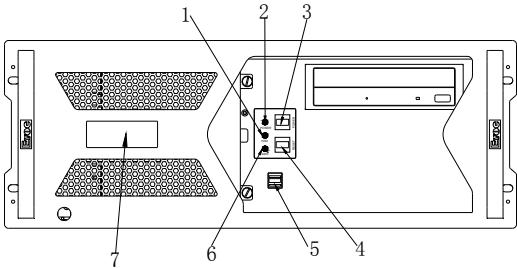
5. 使用说明

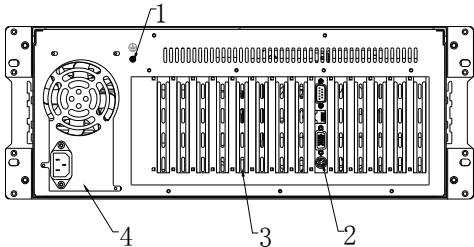
5.1 产品外观图

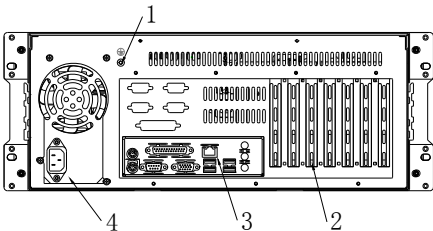


5.2 外部结构图

主板支持 KB-LK 功能设备的正视图	项目	描述
	①	复位键
	②	电源开关
	③	电源指示灯
	④	硬盘指示灯
	⑤	KB-LK 指示灯
	⑥	USB 接口
	⑦	KB-LK 开关键
	⑧	温度显示屏
	⑨	键盘接口

主板不支持 KB-LK 设备的正视图	项目	描述
	①	硬盘指示灯
	②	电源指示灯
	③	电源开关
	④	复位键
	⑤	USB 接口
	⑥	220V 指示灯
	⑦	温度显示屏

IPC/EPI/EPE 主板设备的后视图	项目	描述
	①	接地
	②	主板接口
	③	扩展卡位
	④	电源

ATX 主板设备的后视图	项目	描述
	①	接地
	②	扩展卡位
	③	主板接口
	④	电源

5.3 操作控件



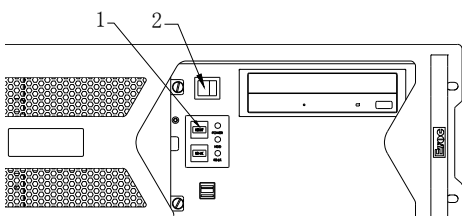
警告

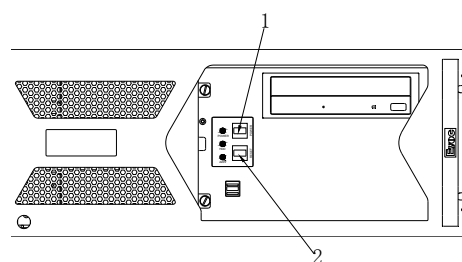
开/关按钮信号不会切断 PC 电源！



小心

PC 执行硬件复位时可能会丢失数据。

主板支持 KB-LK 功能控件按钮	项目	描述
	①	复位按钮 按下复位按钮，信号将触发硬件复位。
	②	电源开关 用于开关设备的开/关按钮。

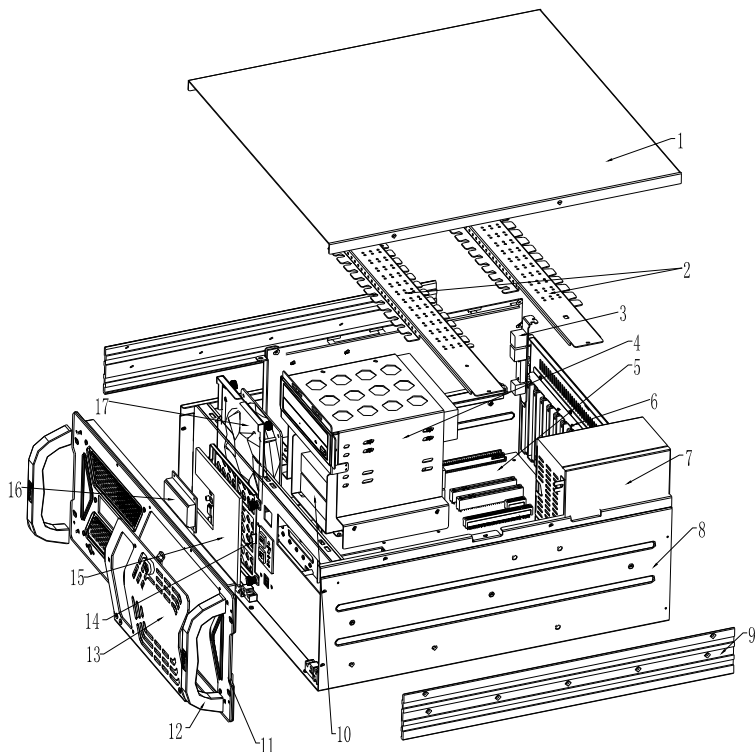
主板不支持 KB-LK 功能控件按钮	项目	描述
	①	电源开关 用于开关设备的开/关按钮。
	②	复位按钮 按下复位按钮，信号将触发硬件复位。

5.4 状态指示灯

显示	含义	LED	描述
POWER	PC 状态显示	不亮	设备停止运行
		绿色	PC 运行中
HDD	显示硬盘访问	不亮	无访问
		红色	访问
220V	交流电源指示灯	不亮	AC 220V 断开
		黄色	AC 220V 连通

6. 拆装与维护

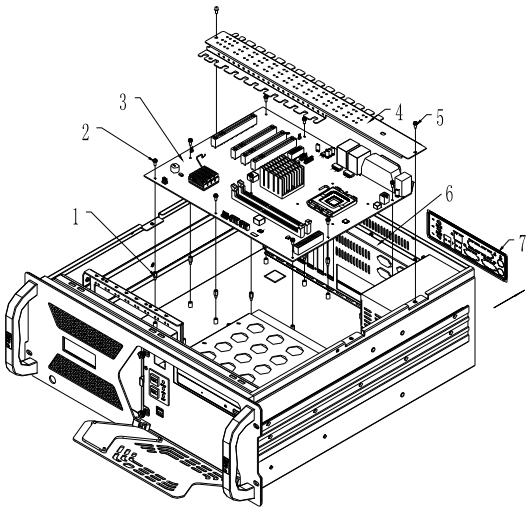
6.1 整体装配图



项目	描述	项目	描述	项目	描述
1	箱盖	2	压条	3	主板
4	光驱组件	5	底板	6	I/O 架
7	电源	8	箱体焊件	9	导轨
10	硬盘组件	11	面板组件	12	把手
13	门	14	防尘网支架	15	防尘海绵
16	温度模块	17	风扇组件		

6.2 主板拆装

6.2.1 ATX主板拆装



项目	描述	项目	描述	项目	描述
1	六角铜螺柱(按实际用量)	2	带垫圈组合 M3*8 螺钉(按实际用量)	3	主板
4	压条	5	半圆头带外齿锁紧垫圈 M4*6	6	I/O 架
7	I/O 挡板				

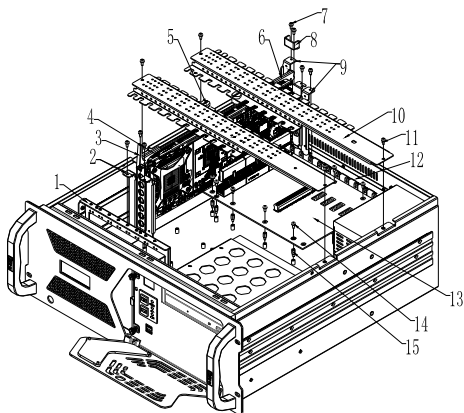
ATX 主板安装:

- 1、把主板I/O挡片从机箱里向外扣在I/O架上(注意方向，要与主板I/O口对应)；
- 2、根据主板安装孔的数量取适当数量的六角铜螺柱CH-M3-8-5-Ni锁付在机箱的压铆螺柱上；
- 3、把要装的主板放在所装的铜螺柱上，轻轻地对好I/O接口，对好安装孔位，用适当数量带垫圈组合M3*8螺钉锁紧主板；
- 4、把压条放在机箱的安装位置上，用半圆头带外齿锁紧垫圈M4*6的螺钉锁付紧。

ATX 主板的拆卸：

- 1、拧開箱蓋沉頭螺釘，拿開箱蓋；
- 2、拧開鎖付壓條的半圓頭帶外齒鎖緊墊圈M4*6的螺釘，拿開壓條；
- 3、拧開鎖付主板帶墊圈組合M3*8的螺釘，即可把主板從機箱里輕輕拿出。

6.2.2 EPE主板拆装



項目	描述	項目	描述	項目	描述
1	卡條架	2	導軌條	3	主板助拔器
4	主板	5	2X橡膠彈壓墊	6	主板助拔器
7	7XM3*6 螺釘	8	助拔支架	9	導軌條
10	壓條	11	4X半圓頭帶外齒鎖緊墊圈M4*6螺釘	12	I/O 架
13	底板	14	帶墊圈組合M3*8螺釘(按實際用量)	15	六角銅螺柱(按實際用量)

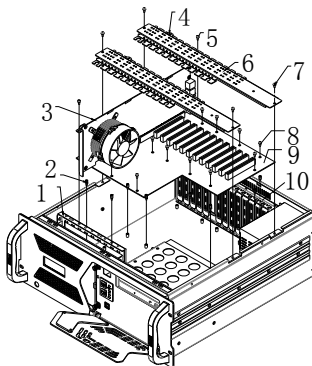
EPE 主板的安装

- 1、根据底板安装孔的数量取适当数量的六角铜螺柱CH-M3-8-5-Ni锁付在机箱相应的压铆螺柱上；
- 2、把要装的底板放在所装的铜螺柱上，对好孔位，用适当数量带垫圈组合M3*8螺钉锁紧底板；
- 3、根据底板的插槽位置，用M3X6的螺钉把4根导轨条及助拔支架按图示分别安装在主板插槽位的左右槽位所对应的IO架和卡条架上；
- 4、把主板按着相应的槽位顺着所装的导轨条轻轻地插在底板上，用2颗M3X6螺钉把主板的键仔和CPU背板支架分别固定在IO架和卡条架上；
- 5、把橡胶弹压垫装在相应位置的压条上，橡胶弹压垫的开槽的方向必须与主板的PCB板方向一致；
- 6、把装好橡胶弹压垫的2根压条放在机箱的安装位置上，使橡胶弹压垫的开槽卡在主板的PCB板上，最后用4颗半圆头带外齿锁紧垫圈M4*6的螺钉分别锁付紧。

EPE 主板的拆卸

- 1、拧開箱盖沉头螺钉，拿開箱盖；
- 2、拧开锁付2根压条的4颗半圆头带外齿锁紧垫圈M4*6的螺钉，拿开压条；
- 3、拧开锁付主板2颗M3*6的螺钉，用双手同时向外扳开2个主板助拔器即可顺着导轨条轻轻地把主板从底板上拔出来。

6.2.3 FSC(EPI)主板拆装



项目	描述	项目	描述	项目	描述
1	卡条架	2	六角铜螺柱 (按实际用量)	3	主板
4	2X 橡胶弹压	5	2X 介子头 M3*6	6	压条
7	4X 半圆头带外齿锁 紧垫圈 M4*6	8	带垫圈组合 M3*8 螺钉(按实际用量)	9	底板
10	I/O架				

FSC(EPI)主板安装:

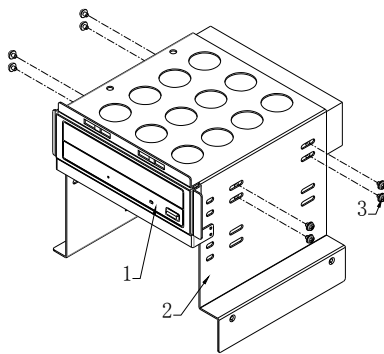
- 1、根据底板安装孔的数量取适当数量的六角铜螺柱CH-M3-8-5-Ni (EPI底板选用六角铜螺柱CH-M3-7.5-5-N) 锁付在机箱里;
- 2、用适当数量带垫圈组合M3*8螺钉锁紧底板;
- 3、把主板按着相应的槽位插在底板上, 用2颗M3X6螺钉把主板的键仔和CPU背板支架分别固定在I/O架和卡条架上;
- 4、把橡胶弹压垫装在相应位置的压条上, 橡胶弹压垫的开槽的方向必须与主板的PCB板方向一致;
- 5、把装好橡胶弹压垫的2根压条放在机箱的安装位置上, 使橡胶弹压垫的开槽卡在主板的PCB板上, 最后用4颗半圆头带外齿锁紧垫圈M4*6的螺钉分别锁付紧。

FSC(EPI) 主板拆卸:

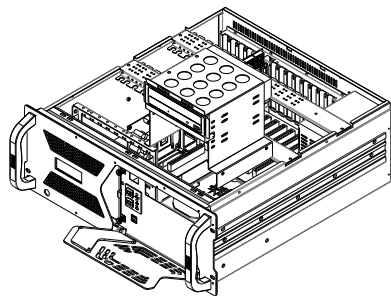
- 1、拧開箱盖沉头螺钉，拿開箱盖；
- 2、拧开锁付2根压条的4颗半圆头带外齿锁紧垫圈M4*6的螺钉，拿开压条；
- 3、拧开锁付主板 2 颗 M3*6 的螺钉，即可把主板从底板上拔出来。

6.3 驱动器拆装

6.3.1 光驱拆装



(图一)

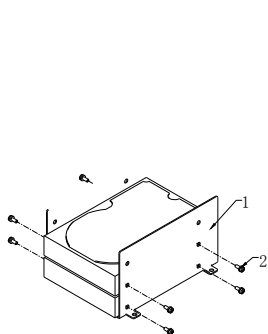


(图二)

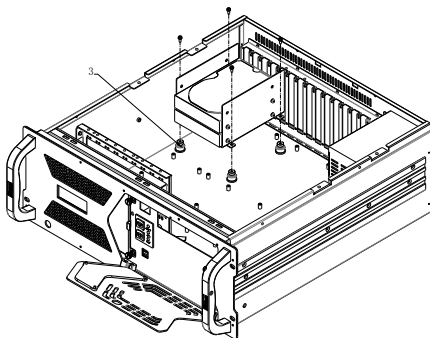
项目	描述	项目	描述	项目	描述
1	光驱	2	光驱支架碰焊组件	3	螺钉 X6

此机箱可装配 1 个光驱，用 8PCS 规格为 M3×6 的盼头组合螺丝把光驱固定在光驱支架碰焊组件上即可（如图一），然后用 2PCS 规格为 M4*8 沉头螺钉将其与机箱侧面锁紧，并用 2PCS 规格为 M3*6 介子头螺钉将其固定在机箱底面上(如图二)。

6.3.2 硬盘拆装



(图一)

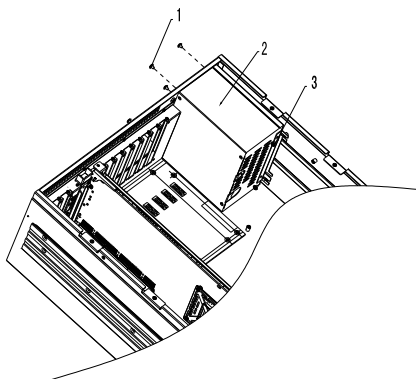


(图二)

项目	描述	项目	描述	项目	描述
1	硬盘支架	2	螺钉	3	油囊减震垫

此机箱装配 3.5 寸硬盘，硬盘模块由硬盘支架和 4PCS 油囊减震垫组成，1PCS 硬盘用 4 颗六角头#6-32×1/4 英制螺钉锁付用，然后用 4PCS 规格是半圆头 M4×6 螺丝把锁付好硬盘的支架组件锁付在机箱组件里即可。

6.4 电源拆装



项目	描述	项目	描述	项目	描述
1	英制螺钉 MHW#6-32× 1/4	2	电源	3	M3 介子 头螺钉

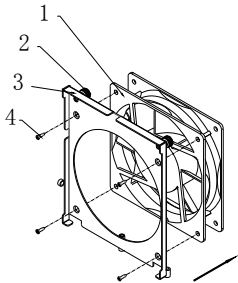
电源的安装：

把电源放在机箱的安装位置上，取4颗英制螺钉把电源尾端锁付紧，最后用2颗M3的螺钉把电源的安装支架锁付在机箱上即可。

电源的拆卸：

打开箱盖，卸掉锁付电源的安装支架的2颗M3的螺钉，最后卸掉4颗锁付电源尾部的英制螺钉即可把电源从机箱里取出来。

6.5 风扇拆装



项目	描述	项目	描述	项目	描述
1	风扇	2	介子头螺钉	3	风扇支架
4	沉头自攻螺钉 ST4. 8*10				

风扇的安装：

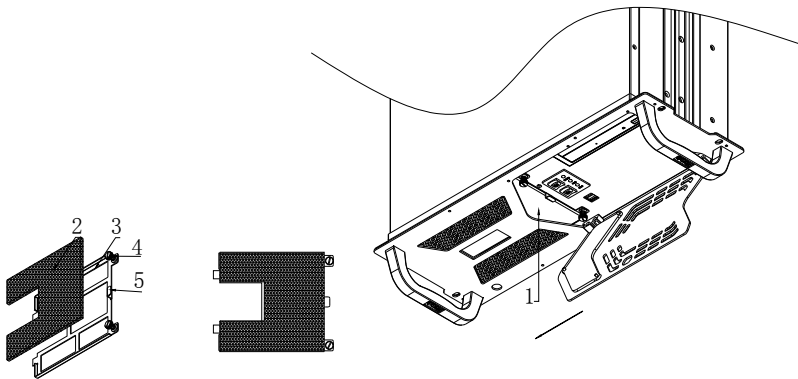
- 1、如图，用4颗自攻螺钉把风扇固定在风扇支架上，要注意方向；
- 2、把组装好的风扇支架整体安装在机箱里（图二），用螺丝刀拧紧介子头螺钉。

风扇的拆卸

- 1、打开箱盖，用螺丝刀拆除介子头螺钉，把风扇支架和风扇整体从机箱里拿出；
- 2、用工具拧开锁付风扇的4颗自攻螺钉即可把风扇拆卸下来。

6.6 防尘网拆装与维护

6.6.1 防尘网安装



图一

图二

图三

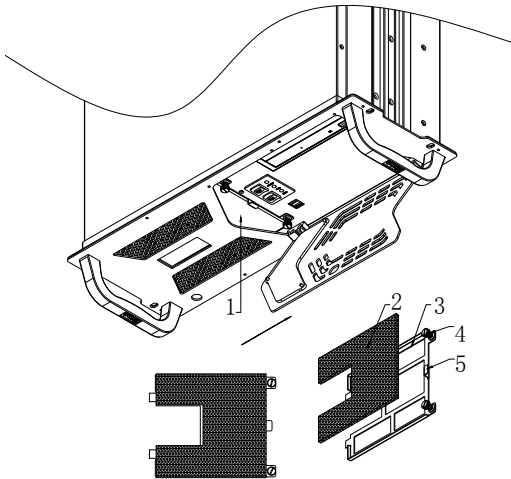
项目	描述	项目	描述	项目	描述
1	过滤网	2	过滤网	3	过滤网架
4	手拧螺钉	5	过滤网架扣手位		

- 1、按（图一）把过滤网放在过滤网架上（图二），接着用钥匙打开门。
- 2、用手拿住过滤网架扣手位按箭头方向把装好过滤网的过滤网架从右边往左边插入，最好拧紧手拧螺钉即可（图三）。

注意

为了保证系统散热和通风状况良好，避免防尘网被灰尘堵住，必须定期清洗防尘网。建议至少 3 个月定期清洗一次，机房防尘环境较差的清洗频率应更高，防尘网在使用一年左右更换一次。

6.6.2 防尘网拆卸



项目	描述	项目	描述	项目	描述
1	过滤网	2	过滤网	3	过滤网架
4	手拧螺钉	5	过滤网架扣手位		

用钥匙打开门，拧开过滤网架的手拧螺钉，用手拿住过滤网架扣手位往左边（按箭头方向）轻轻抽出过滤网。

7. 驱动程序安装说明

本产品的驱动程序安装及主板详细信息请参考整机配套光盘，在此不做介绍。

8. 附录

8.1 常见故障分析与解决

常见故障	可能原因	故障解决方法
设备不能运行	无电源	请检查电源和电源线/连接器
	设备运行不符合指定的环境条件	1、检查环境条件 2、在开启冷天运输的设备之前请等待大约 12 小时。
外接显示器不亮	显示器未打开	打开显示器
	显示器处于“节电”模式	按键盘上的任意键
	亮度控件被设置为黑暗状态	通过亮度控件提高亮度。 有关详细信息,可参考显示器操作说明。
	未连接电源线或显示器电缆	1、检查电源线是否正确地连接到显示器和系统单元或接地出口。 2、检查显示器电缆是否正确地连接到系统单元和显示器。 3、如果执行这些检查后显示器屏幕仍不亮,请与技术支持联系。
PC 上的时间或日期不正确。	BIOS 设置不正确	根据开机画面提示的按键,打开 BIOS Setup, 在 BIOS Setup 中调整时间和日期。
BIOS 设置正确,时间和日期不对。	备用电池电量不足	更换电池

USB 设备不响应	在 BIOS 中已禁用 USB 端口	使用不同的 USB 端口或启用该端口。
	连接了 USB 2.0 设备, 但禁用了 USB 2.0。	启用 USB 2.0。
	操作系统不支持 USB 端口。	1、为鼠标和键盘启用 USB Legacy Support (支持传统 USB)。 2、对其它设备, 需要有适合操作系统的 USB 驱动程序。
计算机未启动或显示 Boot device not found	在 BIOS 设置的启动优先级中, 该启动设备不是第一优先级, 或者未包括在启动设备中。	在 BIOS 设置的“启动”(Boot) 菜单中更改该启动设备的启动优先级, 或将该启动设备包括在启动优先级中。
开机提示找不到系统盘	硬盘电源线或数据线未接好	检查硬盘(硬盘必须是已经装好系统可引导的)的电源线、数据线是否插好。
	硬盘系统文件损坏	用可引导的光盘进入系统(常用 winpe 系统), 检查硬盘系统是否已损坏, 必要时最好重新安装系统。
即插即用 I/O 卡设备, 再次使用时检测不到或不能正常使用。	插槽接触不良	一般是由于 PCI 或 ISA 卡频繁的拔插、固定不稳、防尘措施不好等造成插槽接触不良所致, 可反复拔插几次或者换个槽插。

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.

Danger

If handled carelessly, death or severe human injury will occur.

Warning
--

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

Caution
--

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

Note

Unexpected result or status might occur, if not handled according to the tips.
--

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:

Warning
--

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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Please visit our website: <http://www.evoc.com> for more information, or send an email to the Technical Support Mailbox support@evoc.com (International) or support@evoc.cn (Domestic) for consultation.

Hotline: 4008809666

About this manual

Scope of the Manual

The manual is appropriate for EVOC IPC-820.

Convention

The term “the PC” or “the Product” within the manual usually stands for EVOC IPC-820.

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

IPC-820 is a 4U rack-mount chassis, which supports the complete range of full-size boards and industrial motherboards of our company, such as FSC, EPI, EPE, EC9 and EC0, etc. With built-in high speed fan, the product features excellent heat dissipation as well as excellent anti-vibration and EMC performance.

The product adopts reasonable architecture, advanced design and sheet metal front panel. The main body of the PC is shaped with high-quality steel sheet. The product also deploys dual binding strips structure, which can effectively fix the centre-of-gravity position. The protective system of integrated chassis and door panel with lock prevents unauthorized entry.

IPC-820 can be used in a wide range of fields, such as communication, networking, banking, electric power, transportation, industrial automation, etc.

1.2 Product Specifications

Item		Definition
Main Functional Index	Expansion performance	● Motherboards supported: PICMG 1.0 standard full-size card, PICMG 1.3 standard full-size card, EPI 2.0 standard full-size card, EPE standard full-size card, EC9 standard single board, EC0 standard single board; ● Supported carrier boards: 10-slot standard PICMG 1.0 carrier board, 14-slot standard PICMG 1.0 carrier board, 10-slot standard PICMG 1.3 carrier board, 13-slot standard EPI 2.0 carrier board, 10-slot standard EPE carrier board; ● Supported power supplies: standard PS2 ATX power supply, standard PS2 AT power supply.
	Storage expansion	● 1 x 5.25" CD-ROM bay ● 2 x 3.5" HDD bay (with shock absorption) ● 1 x 3.5" HDD bay (without shock absorption)
	Ports and buttons on the chassis	● Two front-accessible USB 2.0 ports ● ATX switch, reset switch, power indicator, HDD indicator, safety door with lock
	Dimensions (Excluding mounting ear)	482mm (W) x 177mm (H) x 470.4mm (D)
	Net weight	15.3Kg

	Temperature	● Operating temperature: 0℃ ~ 50℃ ● Storage temperature: -20℃ ~ 60℃
	Humidity	5 % ~ 90 % (Non-condensing)
	EMC	● Limits of radio disturbance are compliant with GB9254-2008 class A; Immunity to conducted disturbances class A ● GB/T 17626.2-2006 Electrostatic Discharge, level 2; ● GB/T 17626.4-2006 Burst Immunity, level 2; ● GB/T 17626.6-2008 Conduction Immunity, Level 2 ● GB/T 17626.5-2008 Surge (Impact) Immunity, level 2; ● GB/T 17626.6-2008 Conducted Susceptibility, level 2;
	Reliability	● MTBF ≥ 50000h ● MTTR ≤ 0.5h
	Safety	Meets basic requirements of GB4943.
	Mechanical and environmental adaptability	● Anti-vibration: 5-17Hz/1.0mm amplitude; 17-200Hz/1.0g acceleration; ● Anti-shock: 10g acceleration, 11ms duration.
	Power	Input voltage/Frequency: 220VAC/50Hz

1.3 Status Monitoring and Specifications

1.3.1 Basic Functions

- 1). Display of CPU operating temperature;
- 2). Display of system operating temperature;

- 3). Power supply indication function;
- 4). Giving alarm for upper limit temperature of CPU or system;
- 5). Temperature measuring range: CPU $-10^{\circ}\text{C} \sim 110^{\circ}\text{C}$; SYSTEM $-40^{\circ}\text{C} \sim 80^{\circ}\text{C}$;
- 6). Temperature sampling duration: 3 seconds;
- 7). Saving set data for power failure;
- 8). Auto reminding for temperature over limit or sensor error (open or short)

1.3.2 Button Design

[SET] enter setup mode/switch setup object

[UP] Increase set value, 5°C for each click

[DOWN] Decrease set value, 5°C for each click

1.3.3 Operating Method

Click [SET] to enter setup status. Default CPU temperature is 75°C . After entering into temperature setup interface, the value will flash at 1Hz. You can click [UP] to increase the value by 5°C each click or [DOWN] to decrease the value by 5°C .

Click [SET] again to switch to System Limit Temperature setup, the System Temperature value will flash.

Default setting temperature is 55°C . After entering into temperature setup, the temperature value will flash at 1Hz. You can click [UP] to increase the value by 5°C each click or [DOWN] to decrease the value by 5°C .

Decimal point and the number after the point will not show up while setting up.

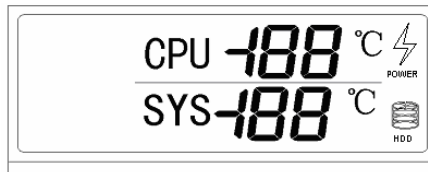
[SET] Exit setup status, display the current CPU and SYSTEM temperature values; it will show "--" when temperature is over limit or sensor error (open, short) occurs.

1.3.4 Giving Alarm When Temperature is Over Limit

When the actual temperature is over limit, buzzer will give alarm for three times and

then stop; while giving alarm, the current temperature value will flash for three times on display at 1Hz and then display the set temperature value for two seconds. The cycle will continue until temperature is below the set temperature and LCD returns to display normal temperature value.

1.3.5 Specification Requirement



* The HDD indicator on LCD will show rotating effect when the HDD is running.

* When CPU is not working normally or error occurs, you can press RESET button to reset CPU.

2. Application Scheme

2.1 Transportation

Well-packaged products are suited for transportation by all kinds of vehicles. During transportation, products should not be put in open cabin or carriage. 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.

Caution

Risk of destroying the device!

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.

2.3 Opening the Box and Initial Examination

Opening the Box

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

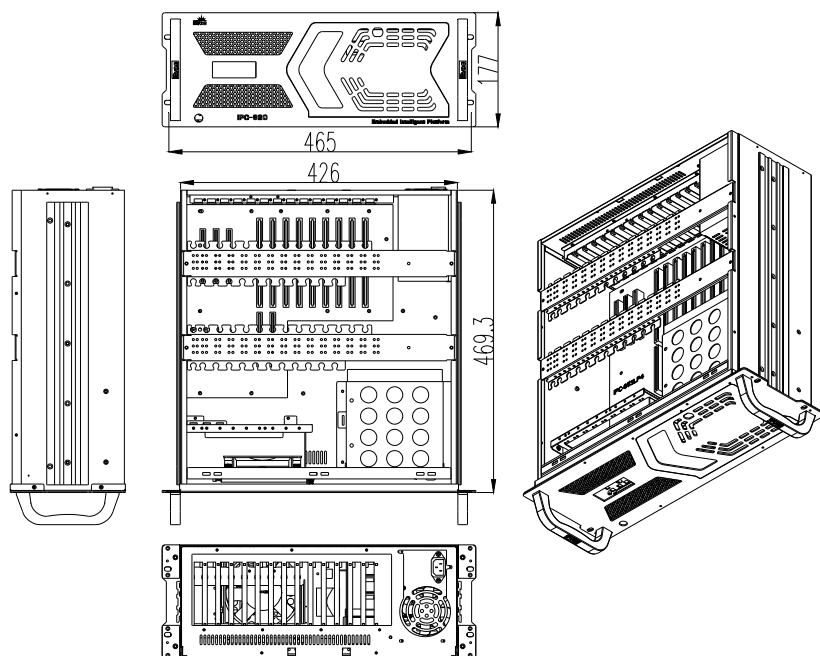
- Do not discard the original packing material. Please keep the original packing material for re-transportation.
- Please keep the documentation at a safe place. The documentation, which is a part of the device, is required for initial device debugging.
- When doing the initial examination, please check 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 Mounting Mode

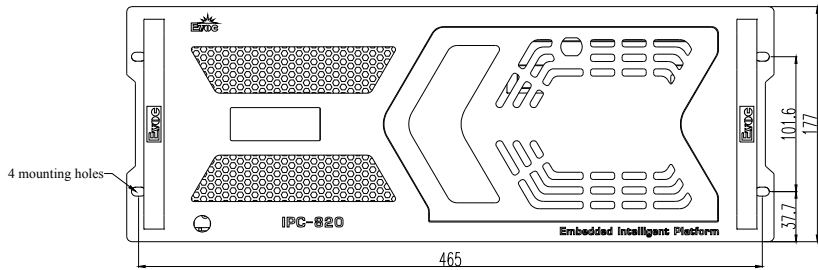
- ☒ 19" Rack Mount ☐ Desktop ☐ Embedded Panel
☐ Wall Mount ☐ VESA Standard Arm ☐ Portable
☐ Others _____

3.2 Outer Appearance and Dimensions



Unit: mm

3.3 Installation Dimensions



Installation method: use M5 or M6 panel screw and M5 or M6 floating nut to mount the product on the standard 19-inch cabinet.

4. Device Connection

4.1 Notices before Connection



Warning

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



Warning

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



Warning

Rated voltage of the device in use shall be in accord with power feature of the product.

Note:

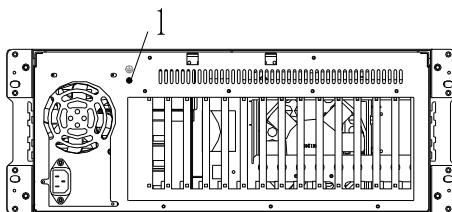
Only the peripheral devices approved for industrial application can be used. When operating the PC, hot swappable IO modules (USB) can be used. The IO devices without hot swap function can only be connected when the PC is powered off.

4.2 Product Grounding

Low impedance 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.

Ground Terminals

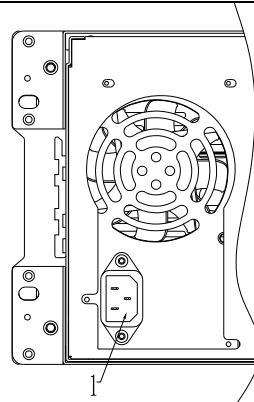
The ground terminal “1” shall be connected with the cabinet installed with the PC or the central grounding busbar on the device. The minimum cross section area of the cable shall be no less than 5mm^2 , and the grounding resistance shall be no more than 0.1Ω .



4.3 Connecting the Device to Power

Steps to connect the device to power:

Connect the power cable to the connector “1”, and press the power switch button on the front panel to boot up the device.



Danger

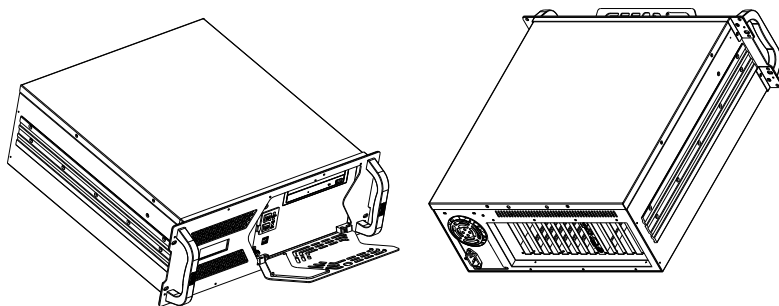
Disconnect the power source and data cable during a lightning storm.

Attention

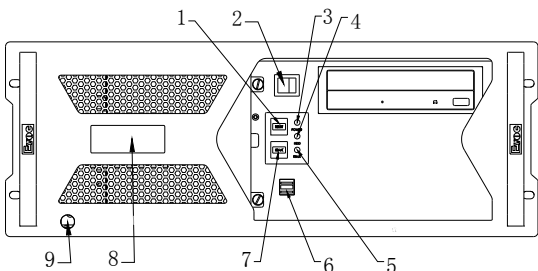
The PC is completely isolated from the power supply only by disconnecting the power connector.

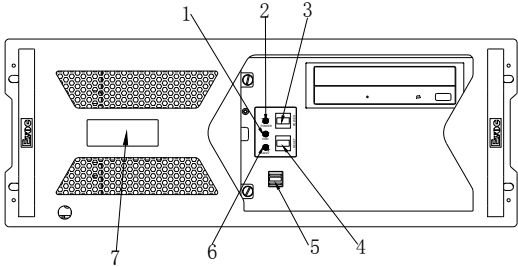
5. Operating Instructions

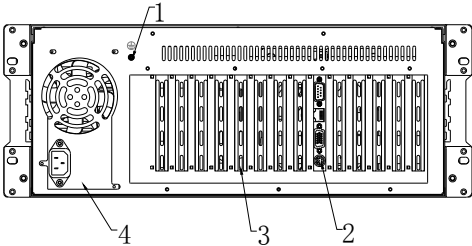
5.1 Outer Appearance

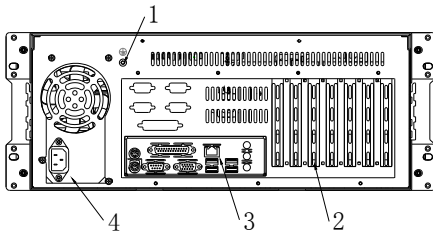


5.2 External Structure

The front view of the PC when KB-LK is supported by the motherboard	Item	Description
	①	Reset button
	②	Power switch
	③	Power indicator
	④	HDD indicator
	⑤	KB-LK indicator
	⑥	USB port
	⑦	KB-LK switch
	⑧	Temperature display screen
	⑨	Keyboard port

The front view of the PC when KB-LK is not supported by the motherboard		Item	Description
		①	Power switch
		②	Power
		③	HDD indicator
		④	220V indicator
		⑤	USB port
		⑥	Reset button
		⑦	Temperature display screen

Rear view of the PC with IPC/EPI/EPE motherboard		Item	Description
		①	Grounding
		②	Motherboard connector
		③	Expansion card slot
		④	Power supply

Rear view of the PC with ATX motherboard	Item	Description
	①	Grounding
	②	Expansion card slot
	③	Motherboard connector
	④	Power supply

5.3 Operation Control



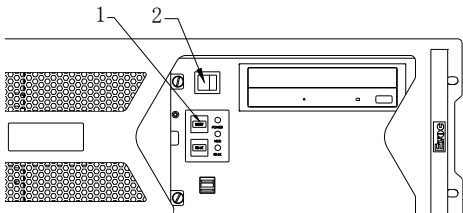
Warning

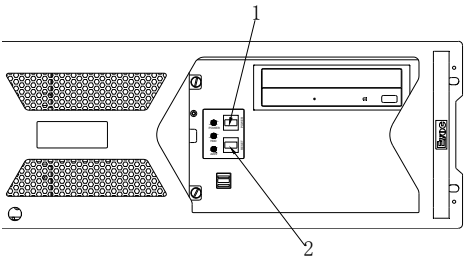
The On/Off button signal will not disconnect PC power supply!



Caution

When the PC executes hardware reset, data may be lost.

The motherboard supports KB-LK function control button	Item	Description
	①	Reset button Pressing the reset button will trigger hardware reset.
	②	Power switch button The On/Off button used to turn on or shut down the PC.

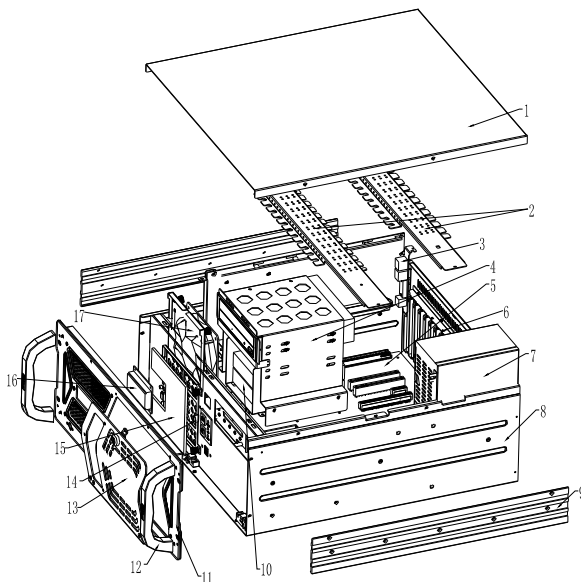
The motherboard does not support KB-LK function control button		Item	Description
		①	Power switch button The On/Off button used to turn on or shut down the PC.
		②	Reset button Pressing the reset button will trigger hardware reset.

5.4 Status Indicators

Display	Meaning	LED	Description
POWER	Display PC status	Off	PC is not operating
		Green	PC is operating
HDD	Display HDD access	Off	No access
		Red	Being accessed
220V	AC power indicator	Off	AC 220V disconnected
		Yellow	AC 220V connected

6. Assembly and Maintenance

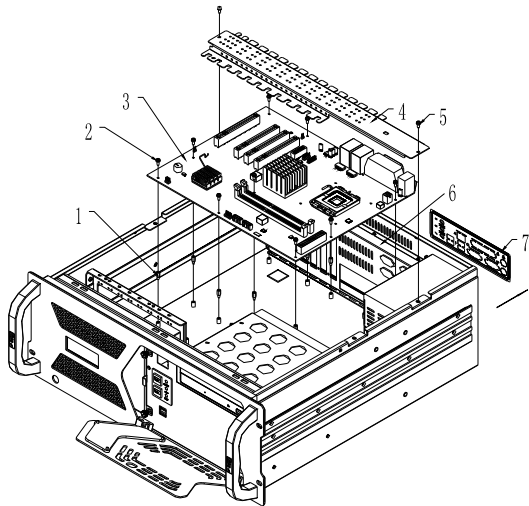
6.1 Overall Assembly Drawing



Item	Description	Item	Description	Item	Description
1	Chassis cover	2	Binding strip	3	Motherboard
4	Optical drive module	5	Carrier board	6	IO bracket
7	Power supply	8	Welded part of the chassis	9	Guide rail
10	HDD module	11	Front panel assembly	12	Handle
13	Door	14	Dust filter bracket	15	Dustproof sponge
16	Temperature module	17	Fan module		

6.2 Installation and Removal of Motherboard

6.2.1 Installation and Removal of ATX Motherboard



Item	Description	Item	Description	Item	Description
1	Copper hexagon screw (as the case may require)	2	M3*8 screws with washers (as the case may require)	3	Motherboard
4	Binding strip	5	Cup head M4*6 screws with external teeth lock washers	6	IO bracket
7	IO plate				

Installing ATX motherboard:

1. Buckle the IO plate of the motherboard on the IO bracket from inside of the chassis toward outside (Please pay attention to the direction: it must correspond to the

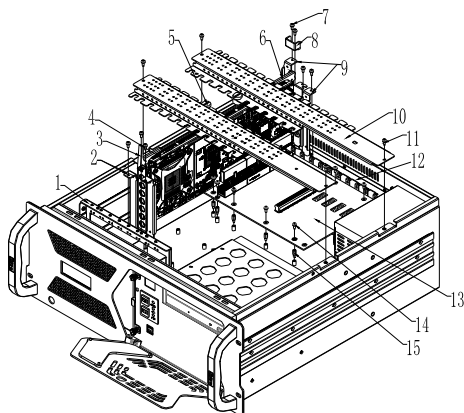
IO port of the motherboard);

2. According to the number of mounting holes of the motherboard, use same number of copper hexagon screws CH-M3-8-5-Ni and lock them on the self-clinching bolts of the chassis;
3. Place the motherboard to be installed on the copper bolts, gently align the position of IO port and mounting holes, and use proper number of M3*8 screws with washers to fasten the motherboard;
4. Put the binding strip on the installation position of the chassis, and use cup head M4*6 screws with external teeth lock washers to fasten it.

Removing ATX motherboard:

1. Loosen the countersunk head screws on the chassis cover, then remove the cover;
2. Loosen the cup head M4*6 screws with external teeth lock washers to remove the binding strip;
3. Loosen the M3*8 screws with washers fixing the motherboard, then the motherboard can be taken out from the chassis.

6.2.2 Installation and Removal of EPE Motherboard



Item	Description	Item	Description	Item	Description
1	Clip bar bracket	2	Guide rail bar	3	Motherboard puller
4	Motherboard	5	2X rubber spring pad	6	Motherboard puller
7	7X M3*6 screw	8	Puller bracket	9	Guide rail bar
10	Binding strip	11	4X cup head M4*6 screws with external teeth lock washers	12	IO bracket
13	Carrier board	14	M3*8 screws with washers (as the case may require)	15	Copper hexagon screw (as the case may require)

Installing EPE motherboard:

1. According to the number of mounting holes of the carrier board, use same number of copper hexagon screws CH-M3-8-5-Ni and lock them on the corresponding self-clinching bolts of the chassis;
2. Place the carrier board to be installed on the copper bolts, align the position of holes, and use proper number of M3*8 screws with washers to fasten the carrier board;
3. According to the slot position of the carrier board, use M3X6 screws to install the four guide rail bars and puller bracket respectively on the IO bracket and clip bar bracket corresponding to the left/right slots of the motherboard, as shown in the above figure;
4. By the corresponding slot and along the guide rail bars, gently insert the motherboard on the carrier board, use two M3X6 screws to fasten the bracket of the motherboard and CPU backplane bracket respectively onto the IO bracket and clip bar

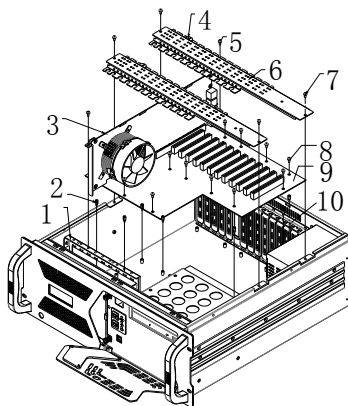
bracket;

5. Install the rubber spring pad on the corresponding binding strip. Please be aware that slot direction of the rubber spring pad must be consistent with the direction of PCB board of the motherboard;
6. Put the two binding strips with rubber spring pad on the installation position of the chassis, make the slot of the rubber spring pad click onto the PCB board of the motherboard, finally use four cup head M4*6 screws with external teeth lock washers to fasten them.

Removing EPE motherboard

1. Loosen the countersunk head screws on the chassis cover, the remove the cover;
2. Loosen the four cup head M4*6 screws with external teeth lock washers fixing the two binding strips, and remove them;
3. Loosen the two M3*6 screws fixing the motherboard, use two hands to push away the two motherboard puller, then you can gently pull out the motherboard from the carrier board along the guide rail bar.

6.2.3 Installation and Removal of FSC(EPI) Motherboard



Item	Description	Item	Description	Item	Description
1	Clip bar bracket	2	Copper hexagon screw (as the case may require)	3	Motherboard
4	2X rubber spring pad	5	2X truss head M3*6	6	Binding strip
7	4X cup head M4*6 screws with external teeth lock washers	8	M3*8 screws with washer (as the case may require)	9	Carrier board
10	IO bracket				

Installing FSC(EPI) motherboards:

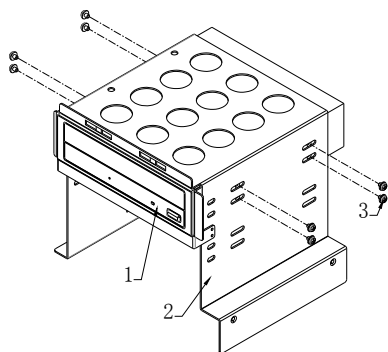
1. According to the number of mounting holes of the carrier board, use same number of copper hexagon screws CH-M3-8-5-Ni (for EPI carrier board, it is copper hexagon screws CH-M3-7.5-5-N) and lock them in the chassis;
2. Use proper number of M3*8 screws with washers to fasten the carrier board;
3. By the corresponding slot, insert the motherboard on the carrier board, use two M3X6 screws to fasten the bracket of the motherboard and CPU backplane bracket respectively onto the IO bracket and clip bar bracket;;
4. Install the rubber spring pad on the corresponding binding strip. Please be aware that slot direction of the rubber spring pad must be consistent with the direction of PCB board of the motherboard;
5. Put the two binding strips with rubber spring pad on the installation position of the chassis, make the slot of the rubber spring pad click onto the PCB board of the motherboard, finally use four cup head M4*6 screws with external teeth lock washers to fasten them.

Removing FSC(EPI) motherboards:

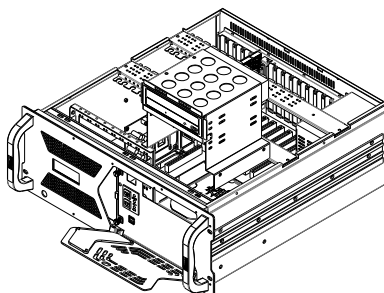
1. Loosen the countersunk head screws on the chassis cover, the remove the cover;
2. Loosen the four cup head M4*6 screws with external teeth lock washers fixing the two binding strips, and remove them;
3. Loosen the two M3*6 screws fixing the motherboard, then you can pull out the motherboard from the carrier board.

6.3 Installation and Removal of Drives

6.3.1 Installation and Removal of Optical Drive



(Figure 1)

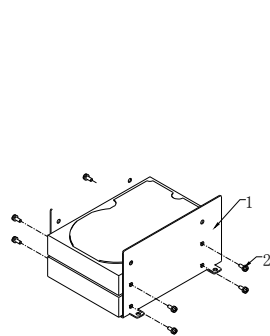


(Figure 2)

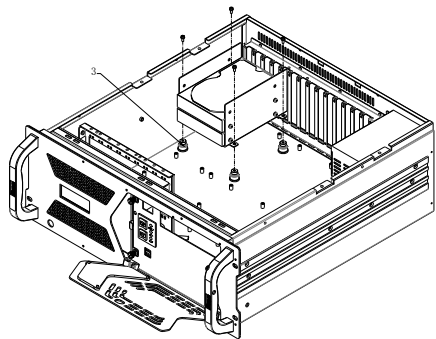
Item	Description	Item	Description	Item	Description
1	Optical drive	2	Butt-weld assembly of optical drive	3	Screw X6

This chassis can be configured with one optical drive. Use 8PCS M3×6 pan head screws to fasten the optical drive on the butt-weld assembly (Figure 1), and use 2PCS M4×8 countersunk head screws the chassis side locking, and use 2PCS M3×6 truss head screw to fix it in the bottom of the integrated chassis(Figure 2).

6.3.2 Installation and Removal of Hard Drive



(Figure 1)

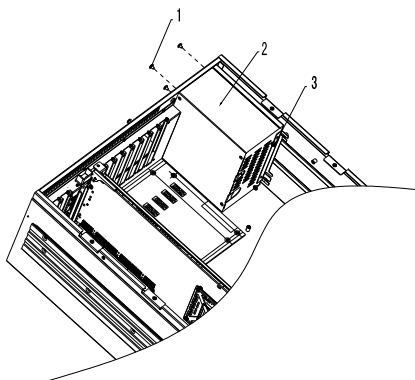


(Figure 2)

Item	Description	Item	Description	Item	Description
1	Hard drive bracket	2	Screw	3	Shock absorber

The chassis is configured with a 3.5-inch hard drive. The hard drive module is composed of a HDD bracket and 4PCS shock absorbers. Fasten the 1PCS hard drive by four hex head #6-32×1/4 BS screws, then use 4PCS cup head M4×6 screws to fasten the HDD assembly in the chassis.

6.4 Installation and Removal of Power Supply



Item	Description	Item	Description	Item	Description
1	BS screw MHW#6-32×1/4	2	Power supply	3	M3 truss head screw

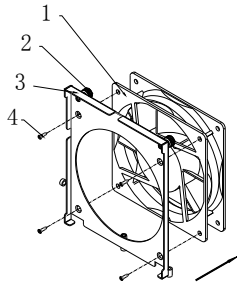
Installing the Power:

Place the power supply in the right position of the chassis, use four BS screws to fasten the end of the power supply, finally use two M3 screws to fasten the power supply mounting bracket onto the chassis.

Removing the Power:

Open the chassis cover, loosen the two M3 screws fixing the power supply mounting bracket, loosen the four BS screws which fasten the end of the power supply, then you can take out the power supply from the chassis.

6.5 Installation and Removal of the Fan



Item	Description	Item	Description	Item	Description
1	Fan	2	truss head screw	3	Fan bracket
4	Countersunk head self-tapping screw ST4.8*10				

Installing the fan:

1. As shown in Figure, use four self-tapping screws to fix the fan onto the fan bracket (please pay attention to the direction);
2. Install the assembled fan module in the chassis (as per Figure 2), and use the screwdriver to tighten the truss head screw.

Removing the fan

1. Open the chassis cover, remove the truss head screw with the screwdriver and take the fan module out of the chassis;
2. Use a tool to loosen the four self-tapping screws, and separate the fan from the bracket.

6.6 Installation, Removal and Maintenance of the Dust Filter

6.6.1 Installing the Dust Filter

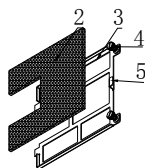


Figure 1

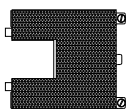


Figure 2

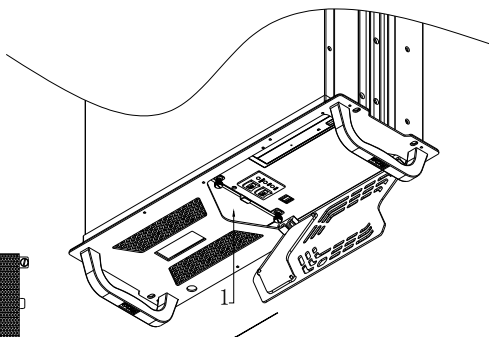


Figure 3

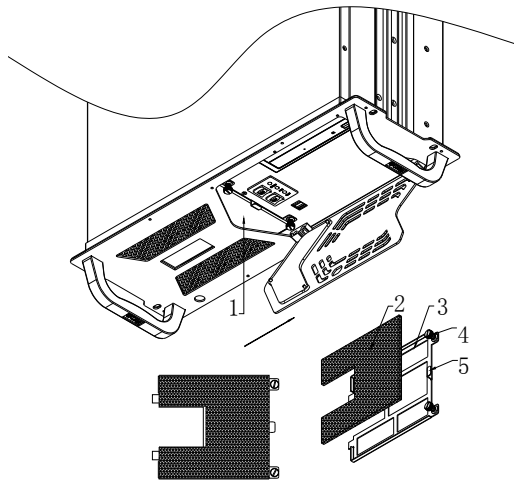
Item	Description	Item	Description	Item	Description
1	Dust filter	2	Dust filter	3	Dust filter bracket
4	Manual screw	5	Dust filter bracket handle		

1. Place the dust filter on the bracket according to the Figure 1 and Figure 2, and open the door with the key;
2. Fasten the two screws fixing the dust filter bracket. Hold the dust filter bracket by the handle and insert the bracket with dust filter from right to left by the direction of arrow, then tighten the manual screws (Figure 3).

Attention

To ensure excellent heat dissipation and ventilation of the system, the dust filter must be cleaned regularly so that it will not be clogged with dust. It is recommended to clean the dust filter at least once every three months, or even more frequently for dusty environment. The dust filter should be replaced every year.

6.6.2 Removing the Dust Filter



Item	Description	Item	Description	Item	Description
1	Dust filter	2	Dust filter	3	Dust filter
4	Manual screw	5	Dust filter bracket handle		

Use key to open the door, loosen the manual screw on the bracket, hold the dust filter bracket handle and gently pull out the dust filter from the left (by the direction of arrow).

7. Installing the Drivers

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

8. Appendix

8.1 Troubleshooting and Solutions

Common Malfunctions	Reasons	Troubleshooting and Solution
The device is not operating	No power supply	Please check the power supply and the power cable/connector.
	Improper device operating environment	1. Check with the environment conditions; 2. Please wait for twelve hours before powering on the device shipped in cold weather.
The external display is black	The display has not been turned on	Turn on the display
	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	1. Please check whether the power cable is correctly connected with the display, the system unit or the ground port. 2. Please check whether the display cable is correctly connected with the display and the system unit. 3. Contact Technique Support if the screen remains black after implementing the above measures.
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.	1. Enable USB Legacy Support for the mouse and keyboard (Legacy USB is supported); 2. For other devices, appropriate USB drivers are required.
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 boot 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.

Plug and play I/O card, no IO card is detected or no IO card can be used when used again.	Poor contact of the slot.	Poor contact is usually caused by frequent installation/uninstallation of the PCI or ISA card, unstable fixing or improper dust-proof measures; please remove and install the card for a few times or use another slot.
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