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AIR CONDITIONER KAC 33/36



顶置空调
安装和使用说明书

CN

Rooftop Air Conditioner
Installation and Operating Instructions





EN

非常感谢您选购**阿雷纳**的制冷设备，在安装或使用该设备之前，请您仔细阅读此说明书。请将说明书保存在所有用户都可以找到的地方，以便随时查阅使用。如果该设备转让或者出售，请确保此说明书也交付给新用户，以便告知他们安装方法、使用和安全要求。

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1.0 安全符号说明

-  **危险！** 表示潜在的危險情况，会导致死亡或重伤。
-  **警告！** 表示潜在的危險情况，会导致轻伤或重度损伤。
-  **注意！** 表示潜在的危險情况，会导致财产损失。
-  **提示！** 产品操作的补充信息。


2.0 安全说明

请遵守车辆制造商和售后服务商提到的安全说明和规定。

以下情况造成的损坏，**阿雷纳**不承担任何责任：

- 错误装配或连接。
- 机械影响和过电压造成产品的损坏。
- 未取得制造商明确许可擅自改变产品。
- 用于此说明书之外的用途。

2.1 一般性安全说明

-  **警告！**
 - 该空调的安装和维修只能由熟悉风险和相关规定的专业人员进行，不当维修可能会造成严重的危险。
 - 该电气设备不是玩具。
 - 请将该电气设备远离儿童或体弱者，不要让他们在没有监督的情况下使用该电气设备。
 - 生理、感官、精神能力受限或者缺乏知识和经验而无法安全使用该电气设备的人，

在没有责任人监督或指导下不得使用该电气设备。

- 不要拆卸该空调的外壳，以防发生火情。如果发生火情，不要用水灭火，要使用许可的灭火剂。



注意!

- 该顶置空调必须安装牢固，防止坠落。
- 不要在靠近易燃液体或者封闭空间内使用顶置空调。
- 确保通风口附近没有存放或者安装易燃物品，应至少保持 50cm 的安全距离。
- 切勿将手插入通风口内或者将异物塞入顶置空调内。



注意!

- 只能按照预期用途使用该电气设备。
- 该顶置空调不适合于安装在农用或者建筑车辆上。
- 不要对该电气设备进行任何变更或者改造。
- 如果制冷回路发生故障，必须由专业的公司进行正确的检查和维修。制冷剂绝对不可以释放到空气中。



提示!

- 请和车辆制造商确认，在安装顶置空调后是否需要技术检测，以及车辆文件中填写的车辆高度是否需要变更。

2.2 操作安全说明



警告!

- 必须由专业人员进行电源线的连接。
- 安装或维护该电气设备时，一定要切断电源。



注意!

- 在穿过有锋利边缘的墙壁时，请使用穿线管铺设电缆线。

- 不要把松动或者弯曲的电缆放置在导电材料旁边。
- 只有在确定外壳和电线未损坏的情况下,才可操作该电气设备。

3.0 预期用途

该顶置空调是专为自行式房车、拖挂式房车和其它带有生活居住空间的车辆设计。

该顶置空调不适合于安装在建筑机械、农业机械或者类似的设备上,剧烈震动会造成顶置空调无法正常工作。

如果环境温度超过 52°C,请不要使用顶置空调,在极端温度下,顶置空调的性能会受到影响。

提示!

- 可以从说明书的技术描述和操作说明中查阅到顶置空调的更多信息。

4.0 技术描述

该顶置空调向室内输送凉爽或温暖的干燥空气。

该顶置空调可以通过控制面板上的按键或者遥控器操作。

提示!

- 顶置空调可以将车内温度降低到一定程度。温度取决于车辆类型、环境温度以及顶置空调的制冷能力。室外温度低于 16°C 时,顶置空调将不再制冷,只运行“送风”模式。

4.1 部件名称

顶置空调的制冷回路包含以下主要部件，详见第 25 页零部件明细表。

- **压缩机**

压缩机将使用过的制冷剂吸入并进行压缩，这就提高了制冷剂的压力和温度。

- **冷凝器**

内置液化器的工作原理与冷却器或热交换器类似，流经的空气吸收热量，热的制冷气体冷却变成液体。

- **蒸发器**

蒸发器将流经的空气进行冷凝和除湿，制冷剂吸收热量并蒸发。

- **风机**

风机通过通风口将冷气吹入车内。

4.2 控制面板

控制面板位于顶置空调的出风口单元上。

包含以下控件和显示元素：

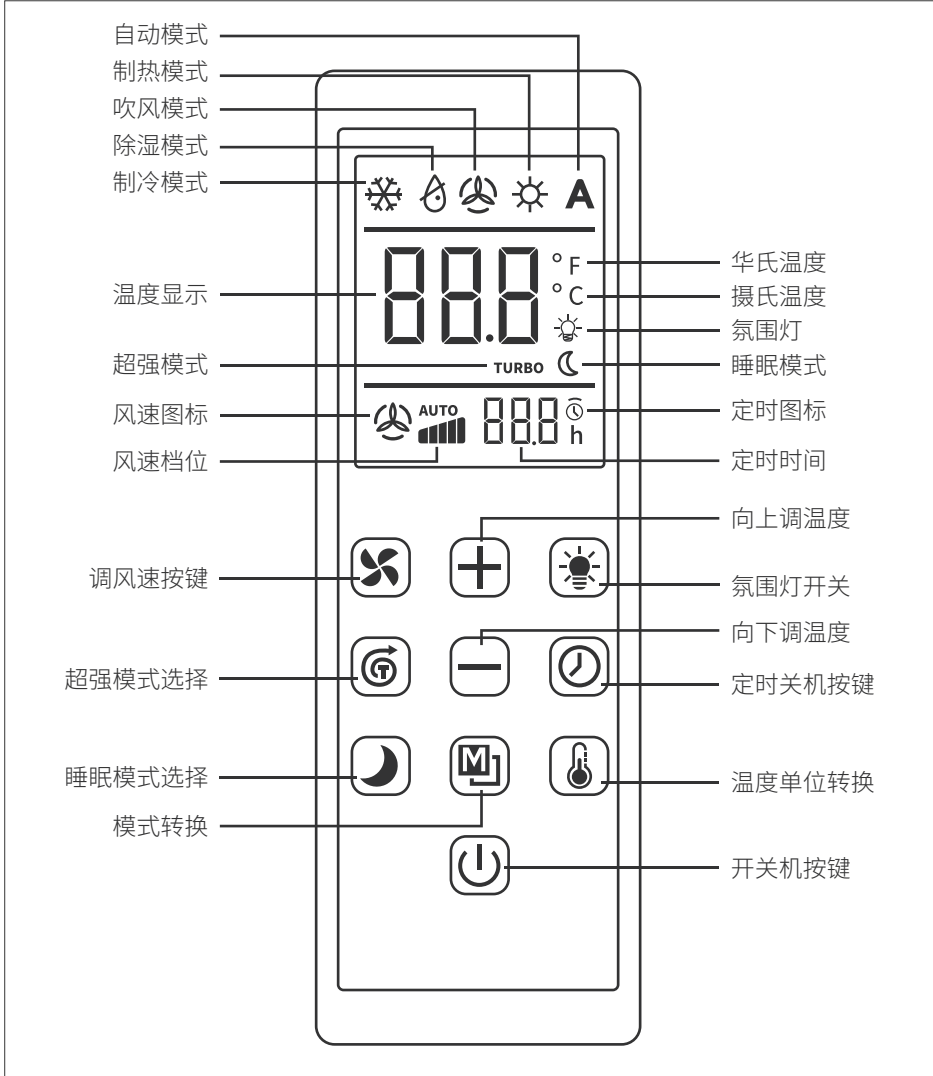


说明	
按键 	开机，长按 3 秒关机
按键 M	转换工作模式
按键 	风速调节
按键 + -	调整设定温度

4.3 遥控控制

通过遥控器控制顶置空调的所有设置。

遥控器可控制以下控件和显示元素：



4.4 工作模式

顶置空调包含以下工作模式：

空调模式	页面显示	说明
自动		根据设定的温度，顶置空调会自动将温度保持在设定温度。
制冷		设定好温度和风速，顶置空调将室内温度降低至此。
除湿		温度和风速锁定（23°C /73 °F，三档），不用调节。
制热		设定好温度和风速，顶置空调将室内温度升高至此。
吹风		设定好风速，顶置空调将空气吹入室内。

提示

- 请使用符合国家规定的连接线。
- 在选择发电机容量时，必须考虑车辆的总用电量，以及发电机的功率会因高海拔和缺少维护而受损这些因素。
- 电路保护：务必使用漏电开关。

5.0 安装说明

注意！

- 请在开始安装和使用该产品前，仔细阅读此安装和操作说明。
- 由于不遵循本说明书引起的任何损失或伤害，制造商概不承担任何责任。
- 安装务必遵守国家电气规程、法规或行业规范。

- 未经阿雷纳的书面授权，该产品不得加装任何设备或附件。
- 该电气设备须由专业人员进行安装和维修。

5.1 选择安装位置

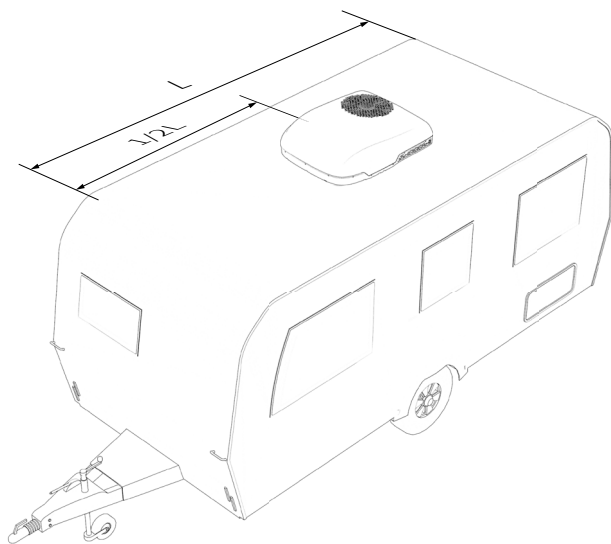
该顶置空调专用于安装在车顶上，在确定您的制冷需求时，应该考虑以下几点：

- 车辆尺寸。
- 车窗面积（面积越大，受热越多）。
- 车厢板和车顶隔热材料的厚度和保温性能。
- 客户使用车辆的地理位置。
- **通用位置：**将顶置空调安装在现有车顶通风口上。

拆除通风口后，通常切割一个 $360 \times 360 \text{mm} \pm 2 \text{mm}$ 或 $400 \times 400 \text{mm} \pm 2 \text{mm}$ 的开口。

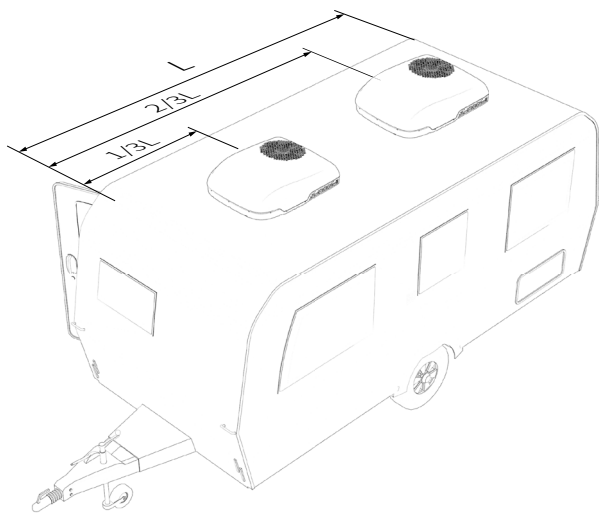
- **其他位置：**当车顶没有通风口或者是有更理想的位置时，建议采取以下做法：
 - a. **安装一台顶置空调时：**应该安装在中心点略靠前的位置（从前头看），并处于左右两端的中心点（见图 01.）。

01



- b. **安装两台顶置空调时：**两台顶置空调应分别安装在距车辆车前端 $1/3$ 和 $2/3$ 的位置，并处于两端的中心点（见图 02。）。

02



· **选择位置后：**

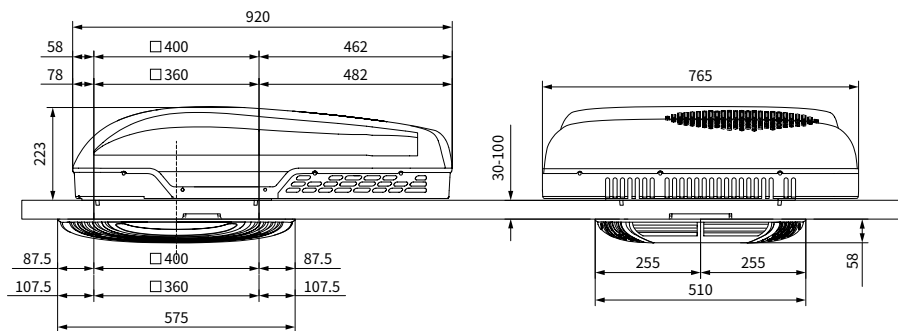
- 检查该电气设备安装区是否有障碍物。
- 当车辆处于运动状态时，顶部须能够支撑 60Kg 的重物，通常 100Kg 的静载荷设计可满足此要求。
- 检查车辆内部是否有阻碍安装顶置空调内面板的障碍物（如：门孔、隔间架、窗帘和天花板夹具等）。空调主机及面板的外形尺寸请见图 03。



注意！

- 该顶置空调最好水平安装（车辆停放在水平表面上为标准），最大倾斜度不可超过 5° 。
- 设计人员应负责确保车辆结构的整体性，切勿在车顶制造会积水的低洼处，否则该电气设备周围不流动的水可能会渗入车内，损坏电气设备和车辆。

03



5.2 顶部准备工作

· 拆除车顶通风口：

- 拧开螺钉，并拆除通风口。
- 去除开口处的所有填隙料。
- 使用优质的耐候密封胶将车顶垫圈处的所有螺钉孔和接缝密封。

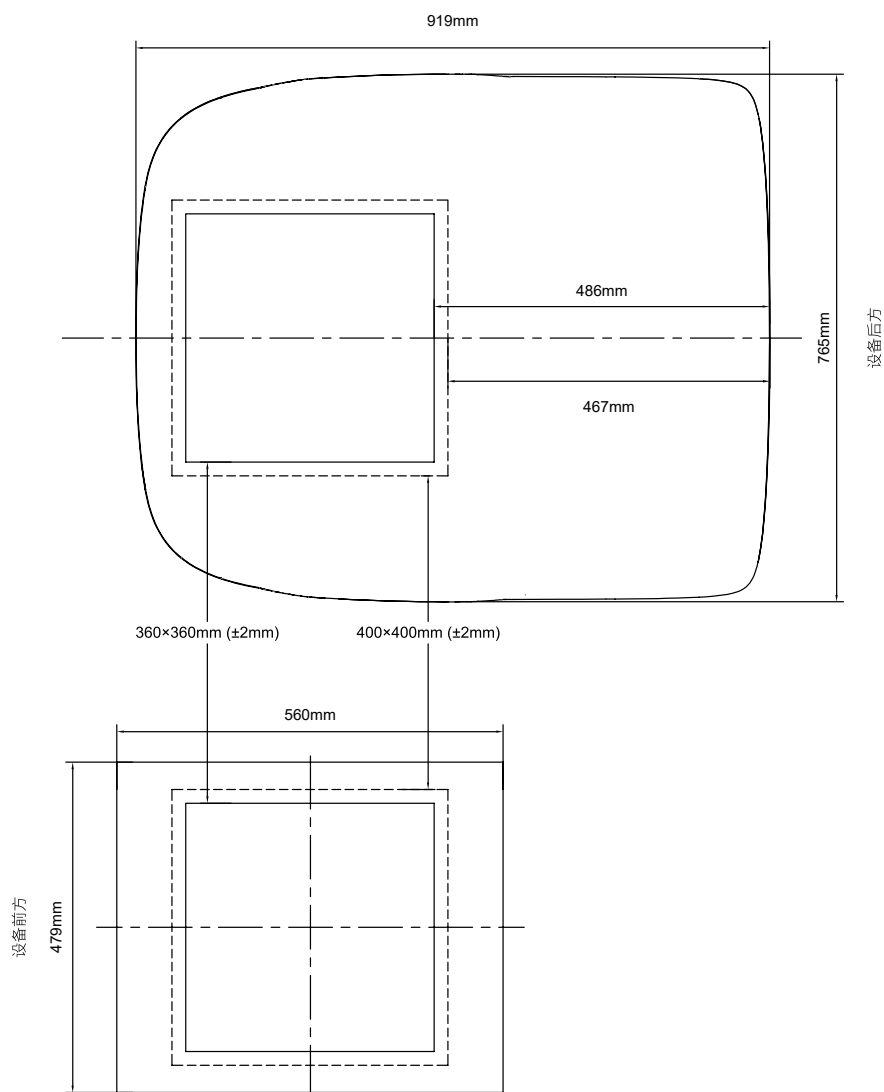
· 新开口：（非通风口的安装）

如果不打算使用现有的车顶通风口，则必须在车顶切割一个 360*360mm（±2mm）或 400mm*400mm（±2mm）的开口，此开口必须位于车顶加强固件之间。

360*360mm（±2mm）或 400mm*400mm（±2mm）的车顶开口是安装该顶置空调所必须的，请参考图 04 所示尺寸和位置在车顶切口。

⚠ 危险！

- 车顶和天花板之间可能有电线，安装时请断开 220V AC 和 12V DC 电源。不遵循此操作有触电的危险，会导致死亡或严重的人员伤害。



- 开口须知：

- 如果开口超过 365*365mm，则有必要安装防水垫片。
- 如果开口小于 358*358mm，则必须扩大开口。

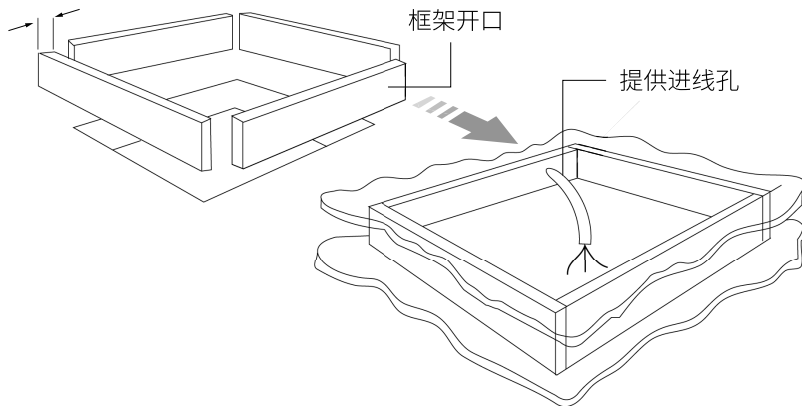
- 布线要求：

需要安装保险丝或断路器，并良好的接地。从断路器引出一条 2.5mm² 的铜质电缆线到车顶开口的前侧。

- 电源必须位于单独的 20Amp 延时断路器上。
 - 确保至少有 380mm 的电线延伸到车顶开口内部，这可方便顶置空调的安装。
 - 必须按照相关国家和地方的规定进行布线。
 - 拆除通风口之后，如果现有电线的尺寸合适并正确安装了保险丝，则可以使用。
 - 接入开口的电线需要加以保护避免损坏。
- 开口处必须有足够的支撑，并需要把车顶夹层充满保温材料，防止夹层内有空气产生共振。必须使用 20mm 厚或更厚的木条密封四周（见图 05。）。
 - 360*360mm±2mm 或 400*400mm±2mm 车顶开口是回气管的组成部分，必须根据行业标准进行抛光处理。

05

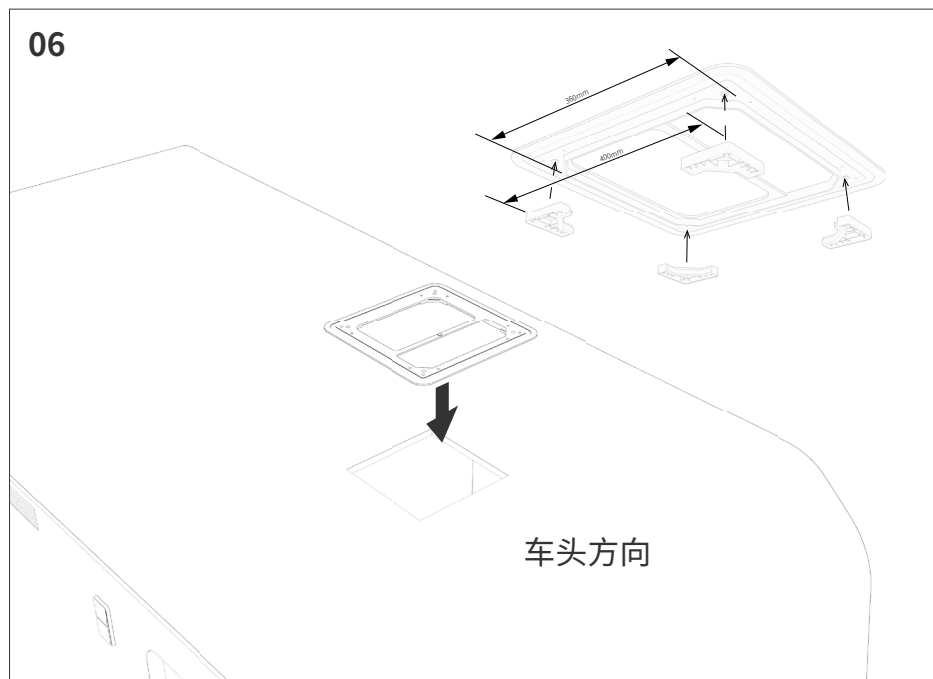
最小值20mm



5.3 将顶置空调放置在车顶上

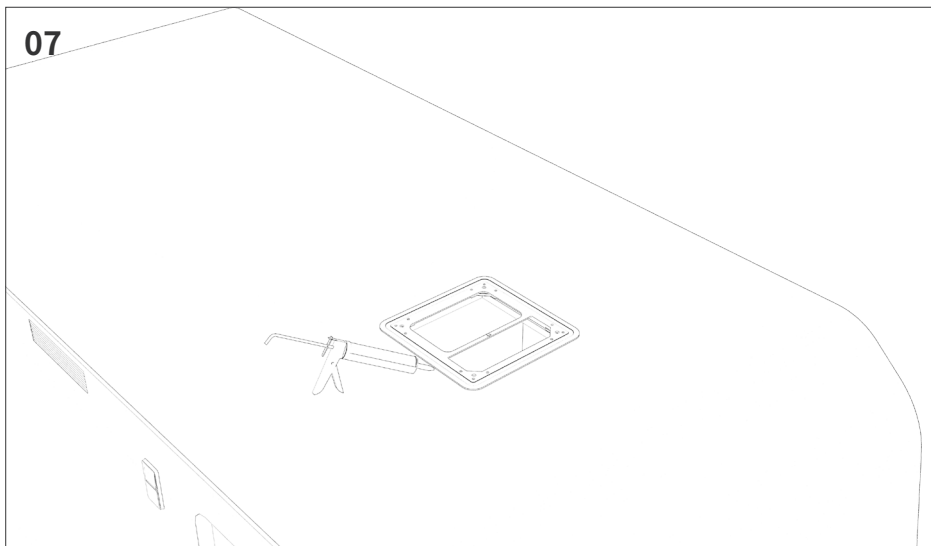
⚠ 注意!

- 该顶置空调约重 39Kg。为防止损坏顶置空调，请使用机械起重机将其吊到车顶上。
- 取出面板纸箱内的车顶安装框，将其放置在车顶上已经准备好的开口上方，注意安装框的方向。安装框可以适合 360x360 及 400x400 两种规格开口尺寸（见图 06。）。



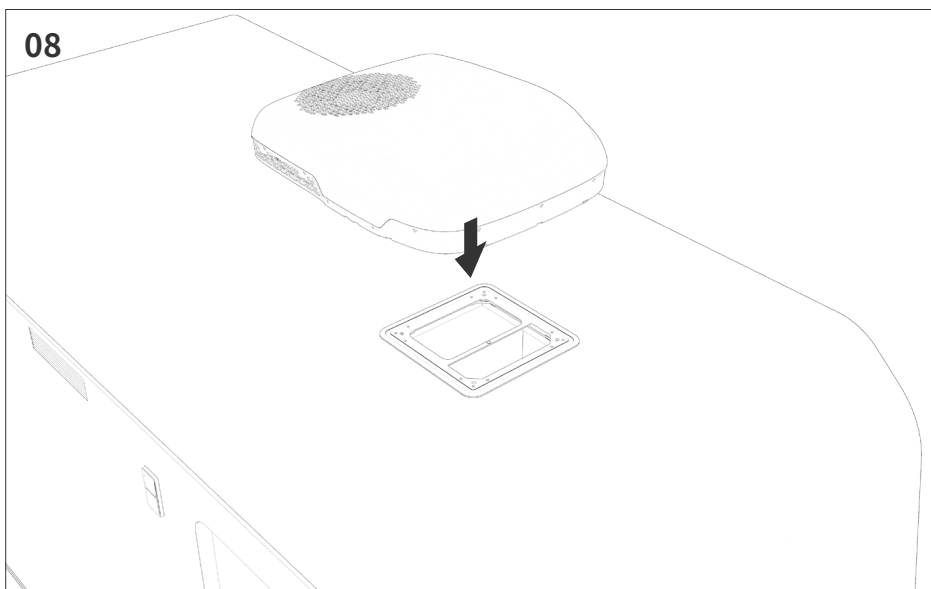
- 使用非硬化丁基密封胶对安装框四周进行密封（见图 07。）。

07



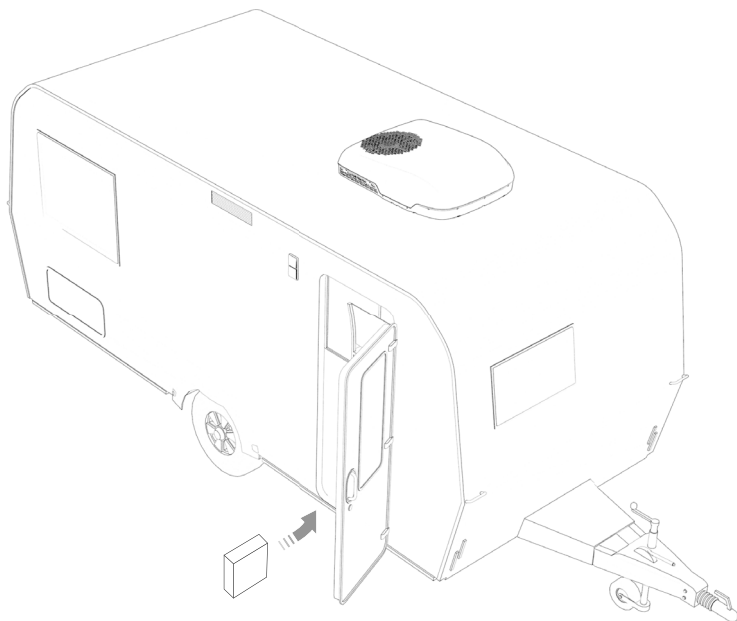
- 取出主机纸箱内的顶置空调主机，将顶置空调对准车顶安装框，放在车顶上（见图08）。

08



- 冷凝器盘管朝向房车的后方（见图 09）。

09



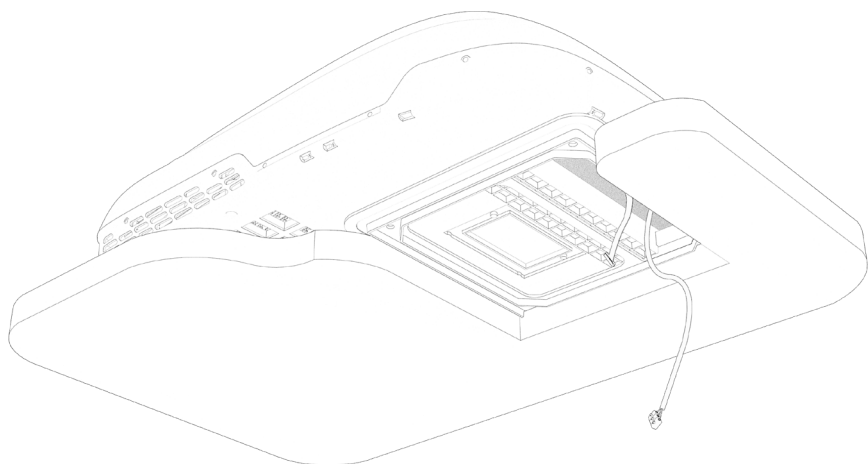
5.4 系统接线

危险!

- 在车内，将顶置空调的电源线从回风口取出并连接到接线器上，然后与车顶开口预留的 240V 电源相连。
- 同时将通讯线也取出备用（见图 10。）。

重要事项：电气安装必须由电工进行，并遵守国家电气规程和当地的准则或规定。

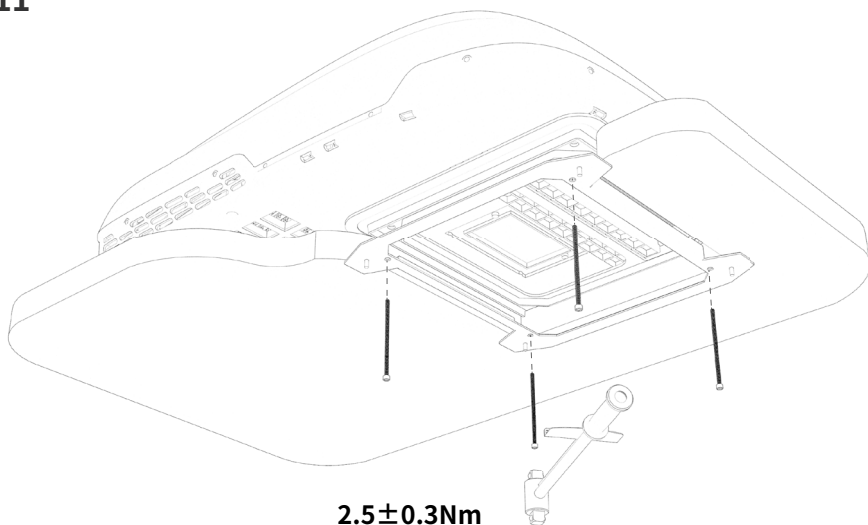
10



5.5 通风面板的安装

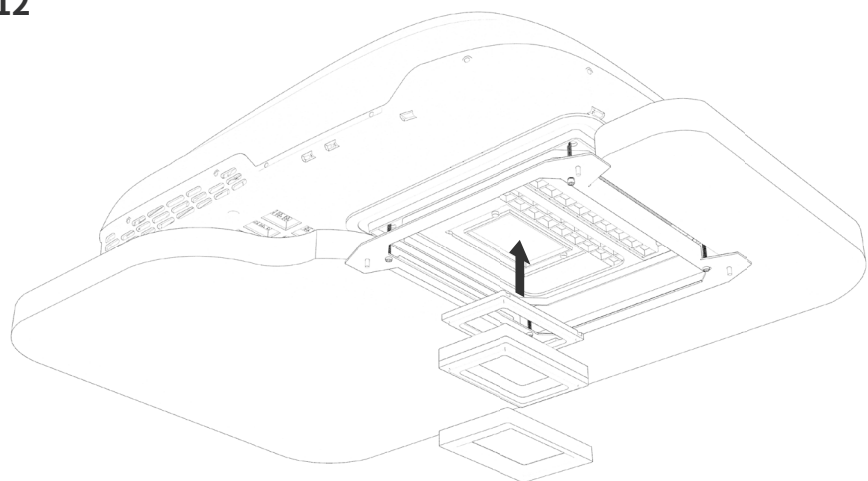
- 取出面板纸箱内的通风面板、金属托架、出风口垫块和安装用的紧固件。
- 对准车顶安装框，使用四根长螺栓（M6 x 120mm）将金属托架与车顶安装框和空调主机固定在一起，紧固扭矩为 $2.5\text{Nm} \pm 0.3\text{Nm}$ （见图 11.）。

11



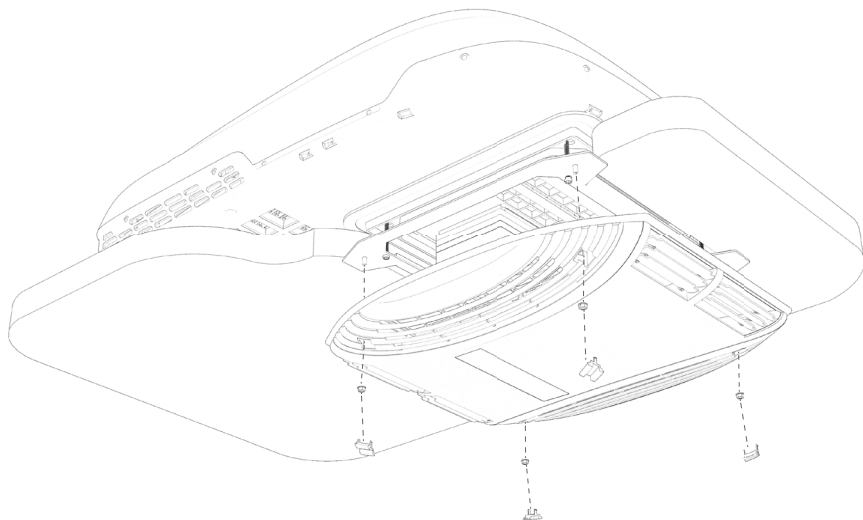
- 依据车顶厚度确定出风口垫块的数量，然后安装到出风口上（见图 12。）。

12



- 将通风面板上的防尘网拉出，把通讯线取出，与主机通讯线的端子相连。
- 对准金属托架的 4 根螺栓，使用 4 颗 M6 螺母将通风面板固定好，扣上盖子（见图 13）。

13



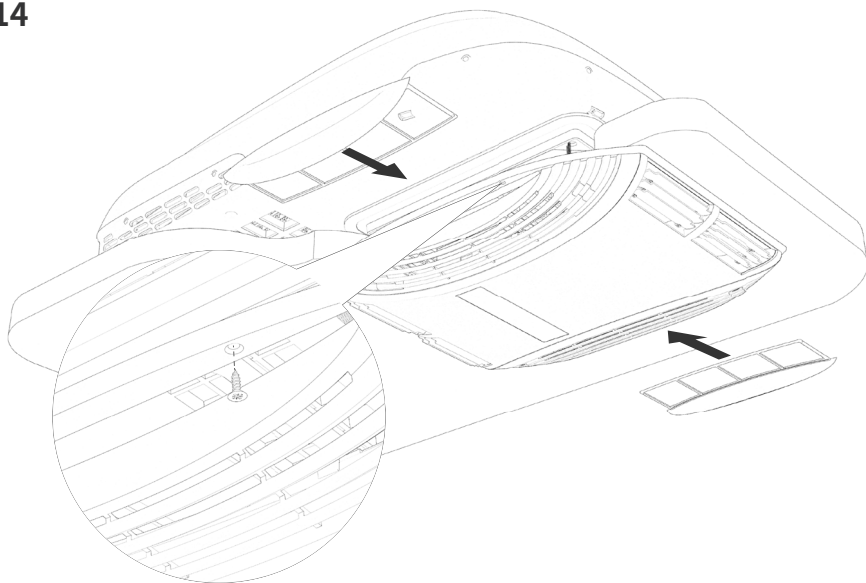
- 根据需要，可以用 4 个自攻螺丝将通风面板固定在天花板上。
- 插入防尘网（见图 14。）。

i 提示！

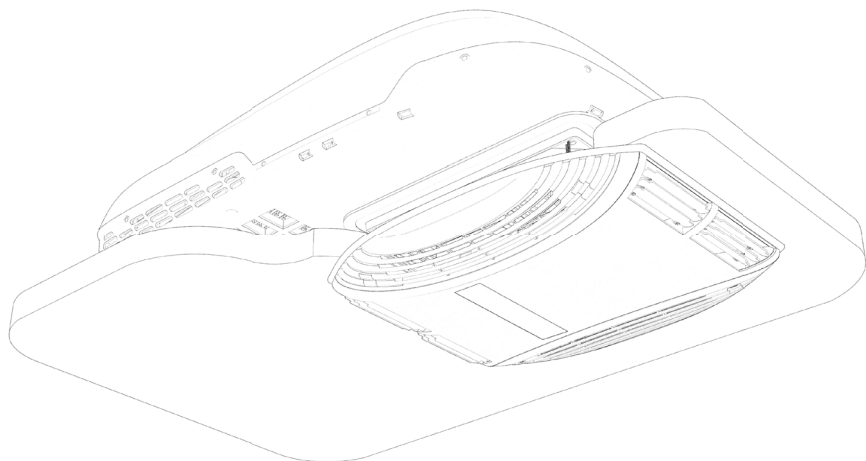
- 检查车顶厚度，风口垫块由 EPP 材料制造，分底板、垫板和顶板三部分构成，每块垫板的厚度为 10mm，最大可以适用于 100mm 的车顶厚度，根据需要加减垫块数量。

CN

14



15



6.0 初次使用

6.1 启动前的检查

在运行顶置空调之前，请注意以下事项：

- 检查电源是否与产品上所粘贴的铭牌参数一致。
- 请确保进气口和送风道无堵塞。所有通风格栅必须始终保持畅通，以确保顶置空调能够发挥最大的制冷性能。

注意！

- 请不要将手指或者物体插入送风道或进气格栅，小心受伤！

6.2 检查遥控器并装入电池

电池盒位于遥控器的背部下方。

- 轻轻向下推动滑盖，将滑盖从导向槽内滑出取下；
- 如电池盒中所示，装入两节 7 号电池（AAA）；
- 将滑盖推入导向槽，向上推动并关闭。

7.0 操作说明

7.1 基本的操作说明

通过触碰控制面板上的按键可以实现：

操作模式	功能
开关机	关机状态下按下  键即开机，在开机状态下长按 3 秒关机。
运行模式选择	按下  键，可以依次选择 自动、制冷、除湿、送风和制热五个运行模式。
调节风速	每按一次  键，风速增加一档，调到四档后再按一次回到自动风速档。
调节温度	可以通过  或  键，来设定温度。

通过遥控器也可以实现以上功能，同时还可以实现如下操作：

- 睡眠模式
- 强冷模式
- 开关氛围灯
- 定时关机
- 摄氏和华氏转换

7.2 遥控器的使用说明


- 遥控器安装上电池 2 秒后点亮显示屏，显示 16 摄氏度 6 秒后进入待机状态。
- 在关机状态下，除了 LED 氛围灯和开关键外，其他按键不起作用，屏幕背光会在 6 秒后熄灭。
- 在开机状态下，按对应的按键发射信号，注意遥控器需要朝向通风面板上的红外线接收器。

功能按键


开关机

按  键，打开或者关闭空调。





运行模式选择

按下  键，可以依次选择 自动、制冷、除湿、送风和制热五个运行模式。





调节风速

每按一次  键，风速增加一档，调到四档后再按一次回到自动风速档。调节温度，可以通过  或  键，来设定温度。


睡眠模式

按下  键，压缩机和风扇都在低速下运行，温度初始设定为 26°C，可以通过  或  键调整温度设定，风速锁定在 1 档，无法调节；再次按下  键即可恢复到正常模式。


强冷模式

按下  键，压缩机和风扇都在最大转速下运行，温度可以通过  或  键调整温度设定，风速锁定在 4 档，无法调节；再次按下  键即可恢复到正常模式。

开关氛围灯

按  键，打开或者关闭通风面板上的 LED 氛围灯。

定时关机

按下  键，可以设定空调关机的时间，每按一次，增加 0.5 小时，最大设置 12 小时。

摄氏 / 华氏转换

按  键，可以显示摄氏度或者华氏度。

8.0 清洁与维护

警告！

- 该处所述的任何维护工作只能由专业人员完成，因为他们了解处理制冷剂 and 顶置空调以及相关事项时可能出现的风险。

注意！预防伤害

- 不要使用高压水枪清理顶置空调。用水冲洗会造成顶置空调损坏。
- 不要使用锋利或者坚硬的东西或者清洁剂清理，否则会造成顶置空调损坏。
- 清理顶置空调时，在清水中加入柔和的清洁剂，切勿使用汽油、柴油或者溶剂。

清洁顶置空调

- 用湿布清理顶置空调的外壳和通风口单元。
- 定期清除顶置空调通风网栅上的落叶和其它污物，清理过程中请注意不要损坏网栅。
- 定期取下通风面板两侧的防尘网，用温水清洗，风干后重新装好。
- 用微湿布擦拭遥控器，我们建议使用眼镜清洁布来清洁显示屏。

维护顶置空调

- 定期检查冷凝水的排放通道是否通畅，冷凝水是否能够排出。
- 每年检查一次顶置式驻车空调与车顶的密封处是否有裂痕和其它损坏。

9.0 故障排除

如果顶置空调发生故障，显示屏右上角的故障灯会亮，并显示故障代码。

故障代码	故障信息
E1	排气感温线故障
E2	内风机故障
E3	外风机故障
E4	室内感温线故障
E5	蒸发器感温线故障
E6	冷凝器感温线故障
E7	室外感温线故障
E8	PFC 电路故障
E9	显示板与驱动板接通讯故障
E10	控制器外通讯故障
E11	控制器内通讯故障
E12	电流硬件保护
E13	电流软件保护
E14	压缩机堵转
E15	压缩机失速
E16	电压欠压
E17	电压过压
E18	制热除霜故障
E19	系统故障

 **提示!**

- 请联系供应商寻求进一步的帮助，该设备须由专业人员进行维修。

10.0 技术参数

型号	KAC 33	KAC 36
空调类型	定频	变频
制冷量	3000W	3300W
制冷功率	1050W	1240W
制热量	2400W	2500W
制热功率	780W	1050W
电源	220V-240V/50Hz	
启动电流	14A	
最大电流		7A
制冷额定电流	4.8A	5.6A
制热额定电流	3.6A	4.8A
电路保护	20A 熔断器或保险丝	
电线标准	国标 2.5mm ² , 使用长度小于 8m	
风量	550m ³ /h	
工作温度	-2°C~ 55°C	
制冷剂	R410a	
充注量	560g	
尺寸 L x W x H	920 x 765 x 223mm	
主机净重 / 毛重	33.7Kg/39Kg	
配件净重 / 毛重	4.4Kg/5.6Kg	

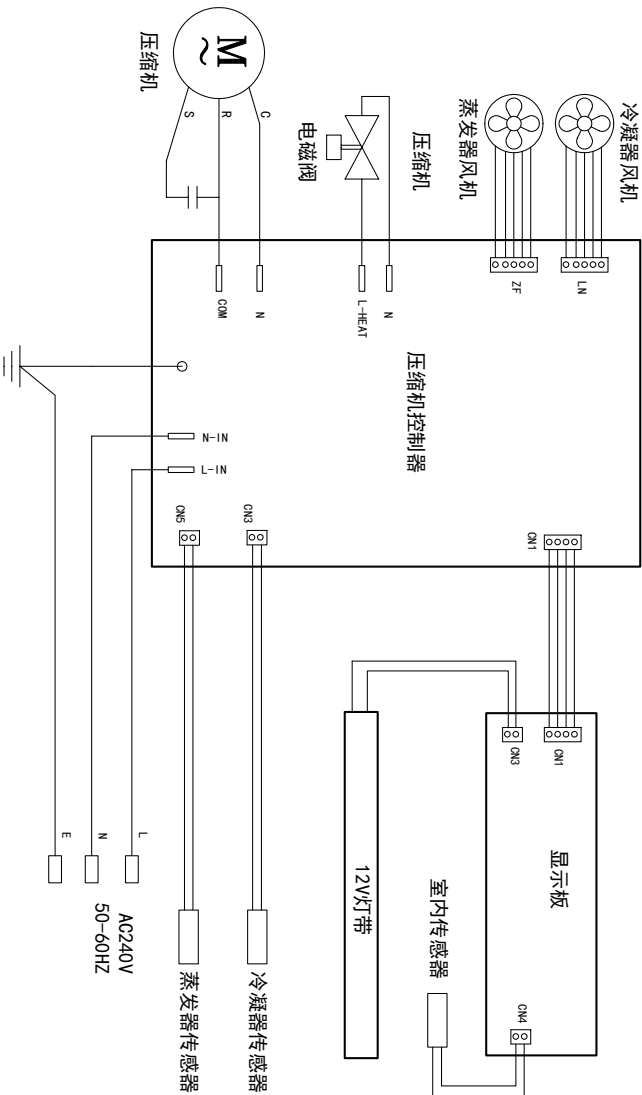


提示!

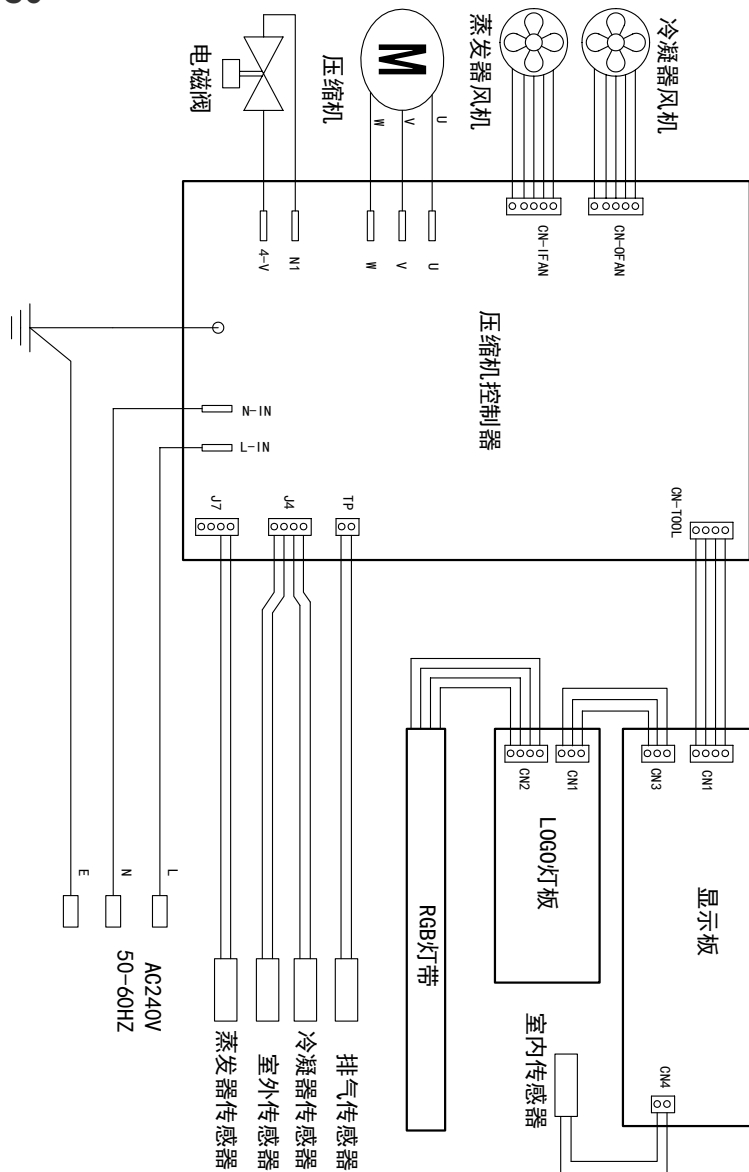
- 我们将不断改进我们的产品，并保留修改某些规格的权利，恕不另行通知，请以产品铭牌为主。

11.0 电路接线图

KAC 33

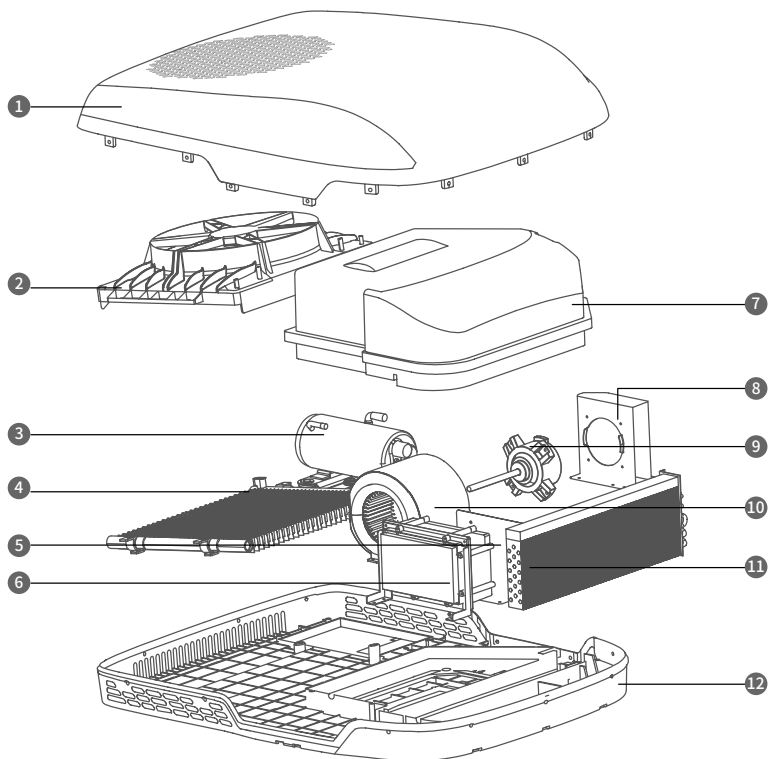


KAC 36



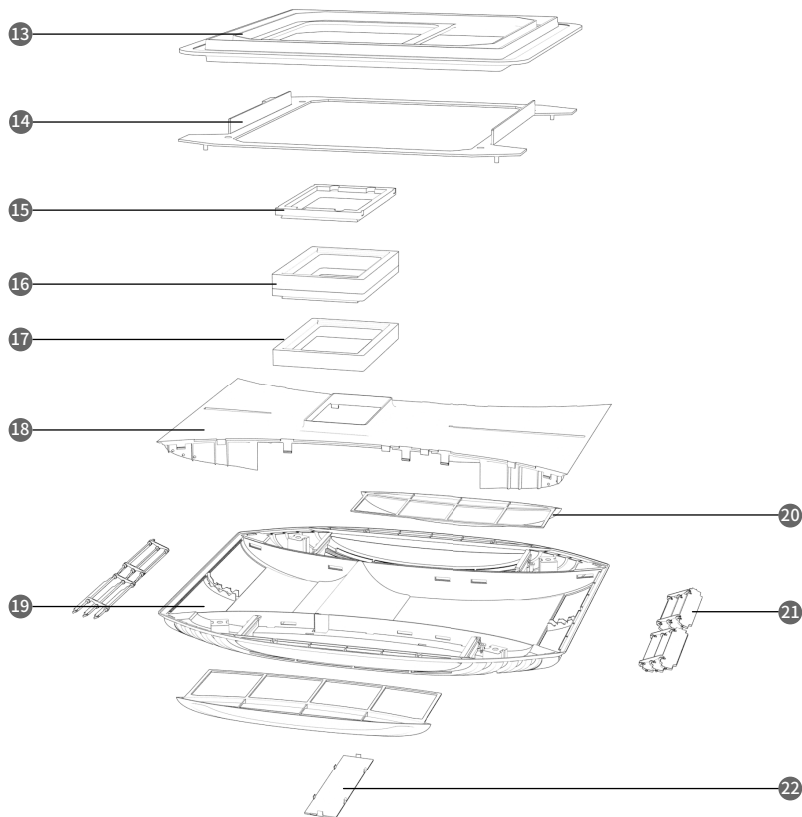
12.0 零部件明细表

16



1	空调上盖	7	蒸发器保温泡沫
2	冷凝器风扇罩	8	电动机固定座
3	压缩机	9	电动机
4	冷凝器	10	蒸发器风机蜗壳
5	控制器盒五金	11	蒸发器
6	控制器盒	12	空调底座

17



13	安装定位框	18	出风罩底座
14	金属托架	19	出风罩上盖
15	风口垫块 - 顶板	20	防尘网
16	风口垫块 - 垫板	21	出风口叶片
17	风口垫块 - 底板	22	显示屏面板

13.0 质量保证

该顶置空调适用法律规定的保修条款和条件，如果产品出现故障，请与最近的经销商联系。
维修该顶置空调，请准备好如下文件：

- 注明购买日期的发票复印件。
- 故障的描述或索赔原因。

但是产品的保修将不覆盖如下情况：

- 在消费者使用产品时所发生的损坏、事故等，而这些损坏不是由于产品材料的缺陷或制造原因导致的。
- 消费者未按照说明书规定进行的误操作而导致的损坏。
- 整机外观破损，包括磨损导致的外观损坏。
- 未经制造商授权的维修、更改。



保 修 卡

客户姓名		联系电话	
产品名称		产品型号	
购买日期		序 列 号	
如果该设备为车厂原装空调，请您填写如下车辆信息：			
车辆品牌		车辆型号	
购买日期		车 架 号	

本保修卡请用户妥善保管，以做维修凭证。
保修期限自购买之日起十二个月内。
全国统一服务电话：400 110 1890



请关注微信公众号







阿雷纳科技(深圳)有限公司
ARANA Technology (Shenzhen) Co., Ltd.

Thanks for choosing **ARANA** air conditioning devices. Please read the instructions carefully before installation or first use of the device and store it in a place where all users could find it for easy reference. If the device is transferred or sold, please hand over the instructions along with it so that the new user is aware of installation methods, usage and safety requirements.

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1.0 Explanation of symbols

- | | |
|--|--|
|  DANGER! | Indicates a potential hazardous situation which, if not avoided, could result in death or serious injury. |
|  WARNING! | Indicates a potential hazardous situation which, if not avoided, could result in minor or moderate injury. |
|  ATTENTION! | Indicates a potential hazardous situation which, if not avoided, could result in property damage. |
|  NOTE! | Supplementary information for product operation. |

2.0 Safety instructions

Please observe the prescribed safety instructions and stipulations from the vehicle manufacturer and service workshops.

ARANA accepts no liability for damage in the following cases:

- Faulty assembly or connection
- Damage to the product resulting from mechanical influences and excess voltage
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in the operating manual

2.1 General safety instructions

WARNING!

- Installation and repair of the rooftop air conditioner may only be carried out by qualified personnel who are familiar with the risks involved and the relevant regulations. Inadequate repairs may cause serious hazards.
- Electrical devices are not toys.
- Keep electrical devices out of reach of children or infirm persons. Do not allow them to use electrical devices without supervision.

- Persons whose physical, sensory or mental capabilities or whose lack of experience and knowledge prevent them from using electrical devices safely should not use it without supervision or instruction by a responsible person.
- Do not undo the upper cover of the rooftop air conditioner in the event of a fire. Use approved extinguishing agents instead. Do not use water to extinguish fires.



ATTENTION!

- The rooftop air conditioner must be installed securely so that it cannot fall down.
- Do not use the rooftop air conditioner near flammable fluids or in closed rooms.
- Make sure no combustible objects are stored or installed near the air outlet. A distance of at least 50 cm must be kept.
- Do not reach into air outlets or insert any foreign objects in the rooftop air conditioner.



ATTENTION!

- Only use the device as intended.
- The rooftop air conditioner is not suitable for use in agricultural or construction vehicles.
- Do not make any alterations or conversions to the electrical device.
- If faults occur in the refrigerant circuit, the system must be checked by a specialist company and repaired properly. The refrigerant must never be released into the air.



NOTE!

- Please ask your vehicle manufacturer if a technical inspection is required after fitting an rooftop air conditioner and whether the height entered in the vehicle documents needs to be altered.

2.2 Operating the device safely



WARNING!

- The electrical power supply may only be connected by a qualified electrician.
- Always disconnect the power supply when working on the electrical device.



ATTENTION!

- Use cable ducts to lay cables through walls with sharp edges.
- Do not lay loose or bent cables next to electrically conductive materials (metal).
- Operate the electrical device only if you are certain that the housing and the cables are undamaged.

3.0 Intended use

The rooftop air conditioner is designed for use in motorcaravans, caravans and other vehicles with habitation compartments only.

The rooftop air conditioner is not suitable for installation in construction machines, agricultural machines or similar equipment. It will not work properly if exposed to strong vibrations.

Please do not use the rooftop air conditioner if the ambient temperature is over 52° C. The performance will be affected at extreme temperature.



NOTE!

- You can find additional information on rooftop air conditioners in the operating manual, such as the technical description or the controls.

4.0 Technical description

The rooftop air conditioner supplies the interior with cool or warm dehumidified air without dust and dirt.

The rooftop air conditioner is operated with the button on control panel and the remote control.

NOTE!

- The rooftop air conditioner can lower the temperature within the vehicle to a certain level. The temperature depends on the type of vehicle, the ambient temperature and the cooling capacity of your rooftop air conditioner.
- Below an outer temperature of 16° C the rooftop air conditioner does not cool anymore. In this case only use the "Ventillation" mode.

4.1 Components

The refrigerant circuit of the rooftop air conditioner consists of the following main components (see Parts list in page 53).

• **Compressor**

The compressor draws in the refrigerant used and compresses it. This raises the pressure and therefore the temperature of the refrigerant.

• **Condenser**

The built-in liquefier works like a cooler or heat exchanger. The air flowing past absorbs the heat and the hot refrigerant gas cools down and becomes liquid.

• **Evaporator**

The evaporators cool down and dehumidify the air flowing past them. The refrigerant absorbs the heat and vaporizes.

• **Blower**

The blower distributes the cooled air within the vehicle through an air outlet unit.

4.2 Control panel

The control panel is at the air outlet unit of the rooftop air conditioner. It contains the following control and display elements:



EN

Explanation

Button 

Switch the rooftop air conditioner on, and long press for 3 seconds to power off.

Button 

Adjusting the fan speed.

Button **M**

Selecting the operation mode.

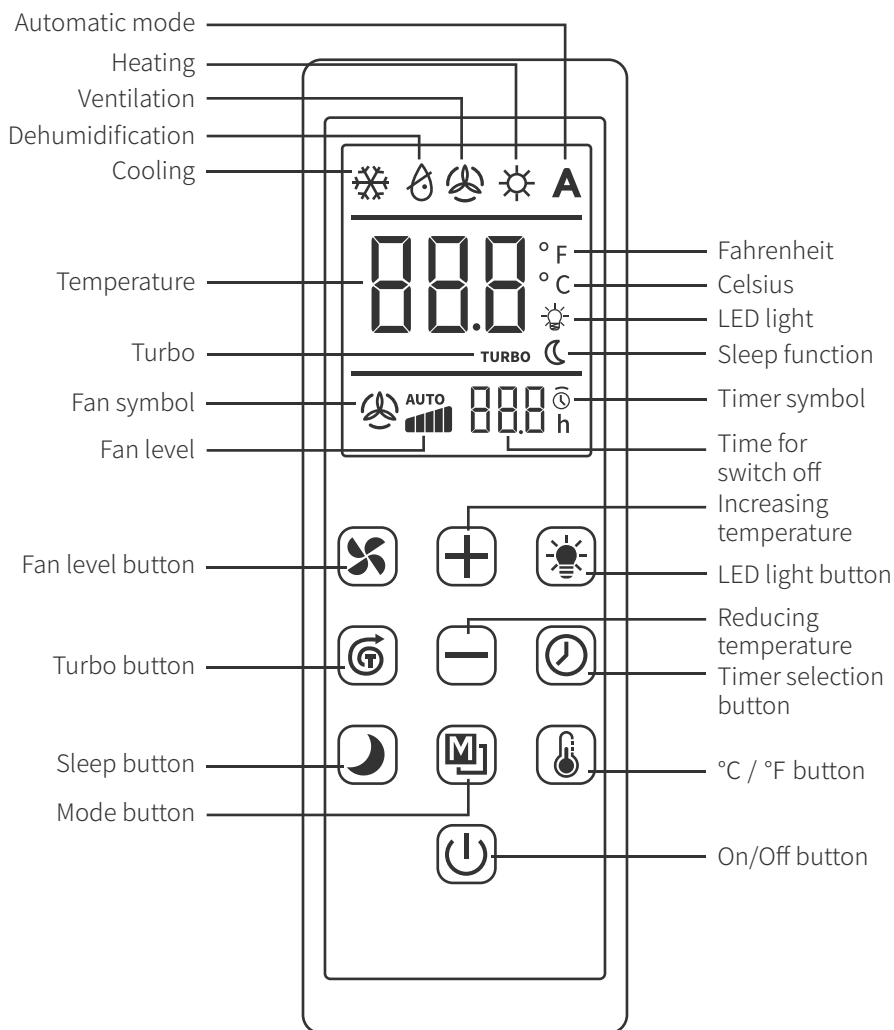
Button **+** **-**

Increasing/reducing the temperature value.

4.3 Remote control





All settings of the device are transmitted to the rooftop air conditioner by remote control.

The following control and display elements are available on the remote control:



4.4 Air conditioning modes

The rooftop air conditioner has the following air conditioning modes:

Mode	Display message	Explanation
Automatic	A	The rooftop air conditioner will automatically maintain the set temperature by heating or cooling as needed.
Cooling		Setting the temperature and fan level, the rooftop air conditioner will reduce the indoor temperature to the value.
Dehumidification		The temperature and fan speed will be locked to 23°C /73 °F and Fan level 3, not adjustable.
Heating		Setting the temperature and fan level, the rooftop air conditioner will increase the indoor temperature to the value.
Ventillation		Setting the fan level, the rooftop air conditioner will blow air into the indoor.

i NOTE!

- Please use the connecting wirings which are in accordance with state regulations.
- When selecting the generator capacity, it is important to consider the total power consumption of the vehicle, and the power loss of the generator due to high altitude and lack of maintenance.
- Circuit protection: Make sure to use the leakage protector.

5.0 Installation instructions



ATTENTION!

EN

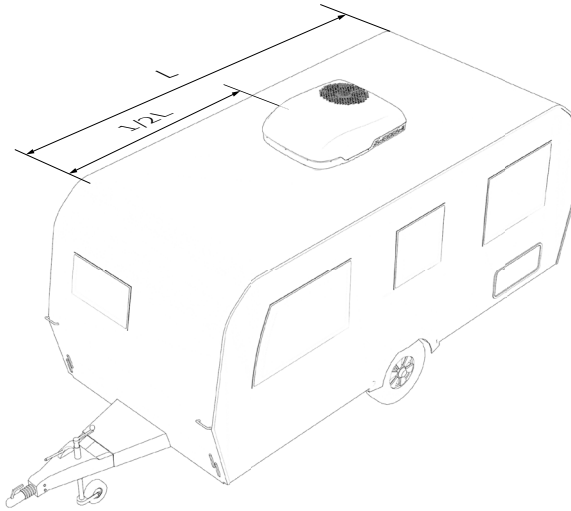
- Read installation and operating instructions carefully before attempting to start your rooftop air conditioner installation.
- The manufacturer will not be liable for any damages or injury incurred due to non-compliance of the instructions.
- Installation must comply with the national and local codes and/or regulations. DO
- NOT add any devices or accessories to the rooftop air conditioner except those specifically authorized in writing by **ARANA**.
- This equipment must be serviced by qualified personnel and some states require these people to be licensed.

5.1 Choosing Installation location

This rooftop air conditioner is specifically designed for installation on the roof of a vehicle with habitation compartments. The following points need to be considered to determine the cooling requirements:

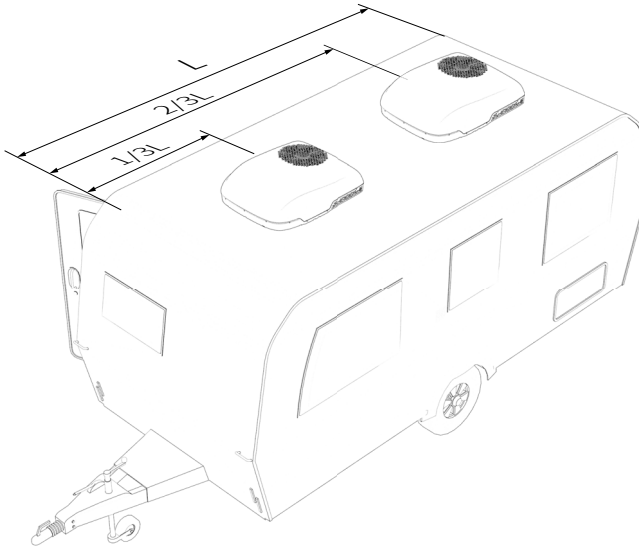
- The size of the vehicle.
- The size of the window (increases heat gain).
- Amount of insulation in walls and roof.
- Geographical location where the vehicle will be used.
- **Normal locations:** the rooftop air conditioner is designed to fit over an existing roof vent opening. When the vent is removed, it normally creates a 360*360mm (+/-2mm) opening or a 400*400mm (+/-2mm) opening.
- **Other locations:** When no roof vent is available or another location is desired, the following is recommended:
 - a. **For one unit installation:** The rooftop air conditioner should be mounted slightly forward of center (front to back) and centered from side to side. See FIG.01.

01



- b. **For two units installation:** Install one rooftop air conditioner $\frac{1}{3}$ and the other $\frac{2}{3}$ from front of vehicle and centered from side to side. See FIG.02.

02



• **After location has been selected:**

- Check for obstructions in the area where rooftop air conditioner will be installed.
- The roof must be designed to support 60KG when the vehicle is in motion.

Normally a 100KG static load design will meet this requirement.

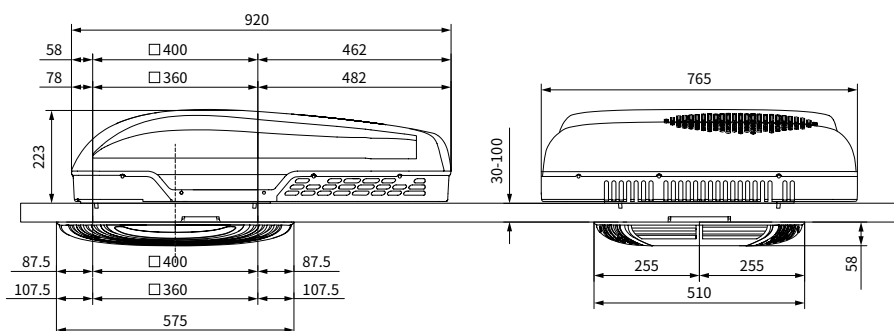
- Check inside the vehicle for air distribution box obstructions(i.e. door openings, room dividers, curtains, ceiling fixtures, etc.). Please check the dimentions of the rooftop air conditioner and the air distribution box. See FIG.03.



ATTENTION!

- It is preferred that the unit be installed on a relatively flat and level roof section measured with the vehicle parked on a level surface, but up to a 5° tilt is acceptable.
- It is the responsibility of the designer to ensure the structural integrity of the vehicle. Never create a low spot on the roof where water will collect. Water standing around the rooftop air conditioner may leak into the interior causing damage to the product and vehicle.

03



5.2 Roof preparation

- **Roof vent removal:**

- Uncrew and remove the roof vent.
- Remove all caulking compound around opening.
- Seal all screw holes and seams where the roof gasket will be located. Use a good grade of all weather sealer.

- **New opening :** (installation other than vent opening)

A 360*360mm (+/-2mm) or 400*400mm (+/-2mm) opening must be cut through the roof and ceiling of the vehicle if the existing vents will not be used. It is recommended this opening be located between roof reinforcing members.

Mark a 360*360mm (+/-2mm) or 400*400mm (+/-2mm) square on the roof and carefully cut the opening. Using the roof opening as a guide, cut the matching hole in the ceiling. See FIG.04.



DANGER!

- There may be electrical wiring between the roof and the ceiling. Disconnect 220V AC power cord and the positive (+) 12V DC terminal at the supply battery. Failure to follow this instruction may create a shock hazard causing death or severe personal injury.

- **Opening instructions:**

- If the opening exceeds 365*365mm, it will be necessary to install spacers.
- If the opening is less than 358*358mm, it must be enlarged.

- **Wiring requirements:**

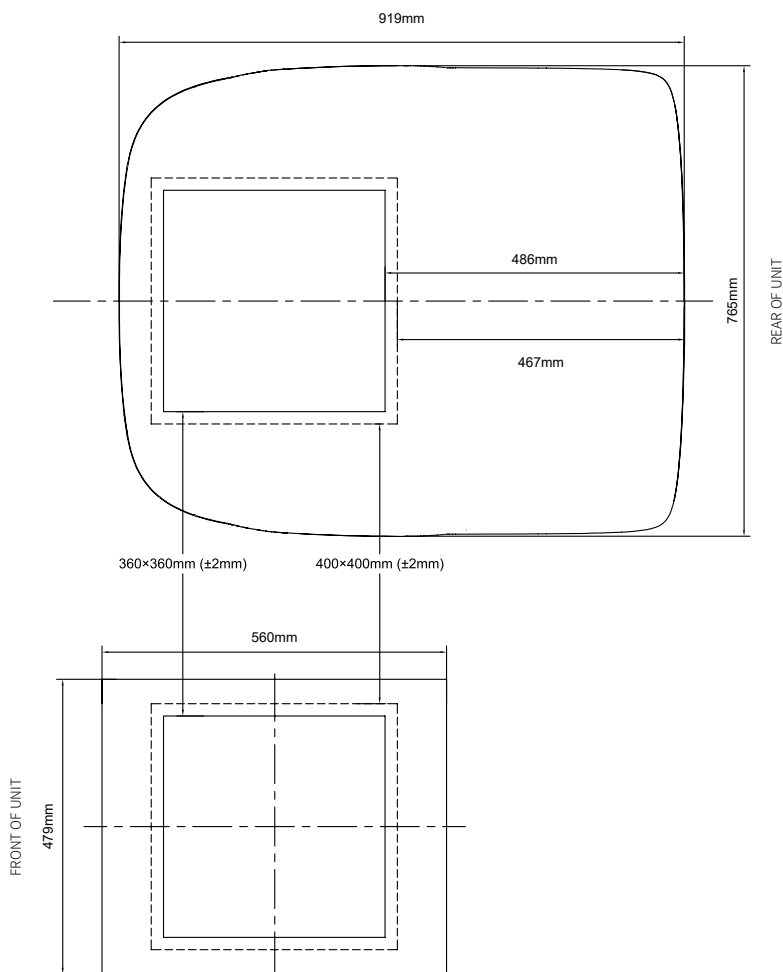
Route a copper 2.5mm², with ground, supply line from the fuse or circuit breaker box to the roof opening.

- The power supply must be on a separate 20 Amp Time Delay Fuse or HACR Circuit Breaker.
- Make sure at least 380mm of wire extends into the roof opening. This insures easy

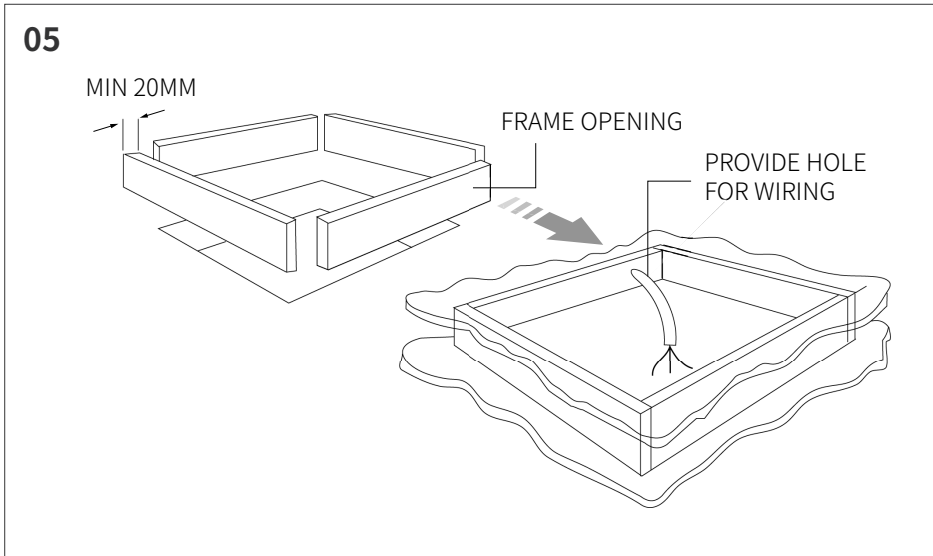
rooftop air conditioner attachment.

- c. Wiring methods must comply with all national and local wiring codes and/or regulations.
- d. If vent fan was removed, the existing wire may be used provided it is of proper size and correctly fused.
- e. The entry wires to the opening need more protection to avoid damage.

04



- The opening must be framed to provide adequate support and prevent air from being drawn from the roof cavity. Framing stock 20mm or more in thickness must be used. Remember to provide an entrance hole for the power supply wire. See FIG.05.



EN

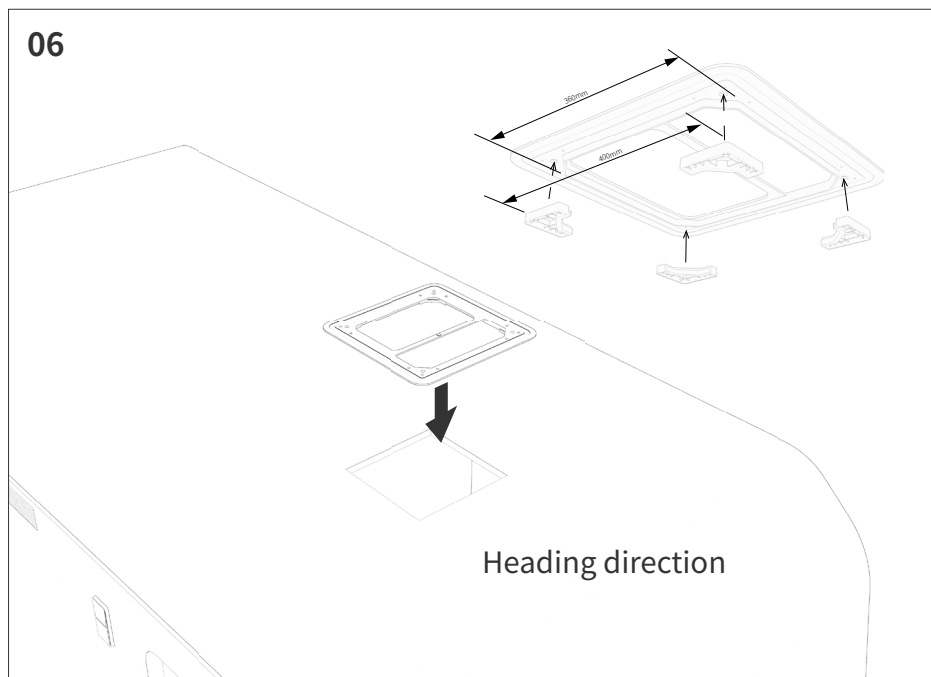
- The 360*360mm (+/-2mm) or 400*400mm (+/-2mm) roof opening is part of the return air duct and must be polished according to the industry standard.

5.3 Placing rooftop air conditioner on the roof



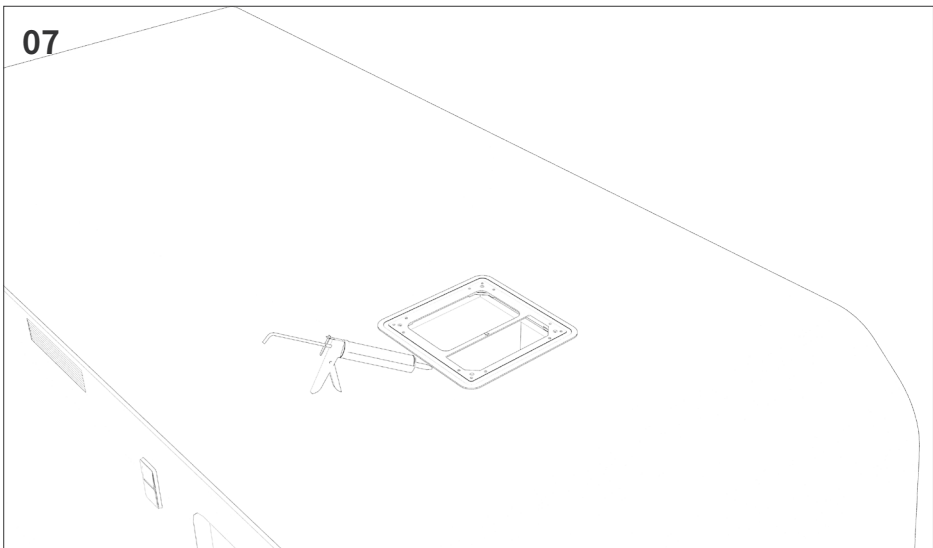
ATTENTION!

- This rooftop air conditioner weighs approximately 37Kg. To prevent back injury, use a mechanical hoist to place air conditioner on roof.
- Take out the roof mounting frame from the carton, and place it on the prepared opening in the roof, pay attention to the direction of the frame. The mounting frame can be suitable for two opening sizes of 360 x 360 and 400 x 400mm. See FIG.06.

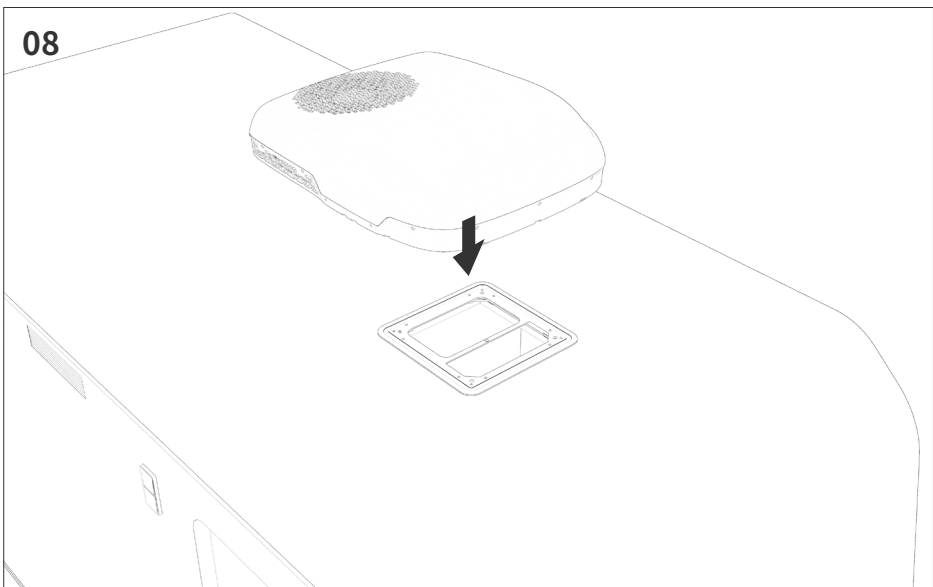


ATTENTION!

- Do not slide the unit. This may damage the EVA gasket attached to the bottom and create a leaky installation.
- Seal around the roof mounting frame with flexible non-hardening butyl sealing compound. See FIG.07.

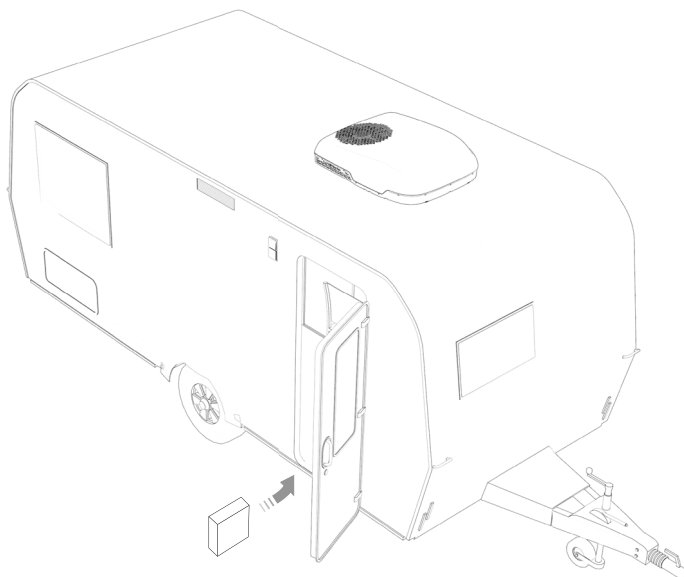


- Take out the rooftop air conditioner from the carton, and place it on the roof aligning with the roof mounting frame. See FIG.8.



The condenser coil goes toward the rear of the vehicle. See FIG.9.

09



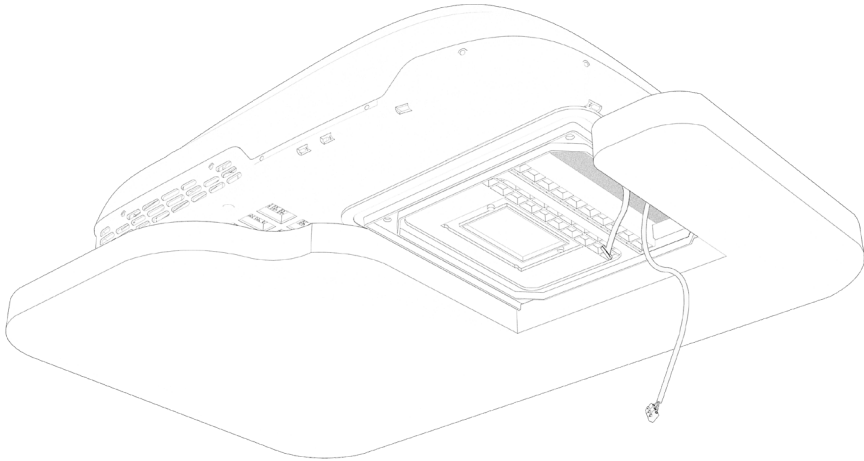
5.4 Wiring the system



DANGER!

- Disconnect 220V AC. Failure to follow these instructions could create a shock hazard causing death or severe personal injury!
- This product is equipped with a 3 wires (grounded) system for protection against shock hazard. Make sure that the appliance is wired into a properly grounded 220V/50Hz AC circuit and the polarity is correct. Failure to do so could result in death, personal injury or damage to the equipment.
- Take the wiring from the return air outlet and connect it to the connector, and then connect it with the prepared 240V power supply at the roof opening.
- Take out the communication cable and leave it there for next step connection later. See FIG.10.

10

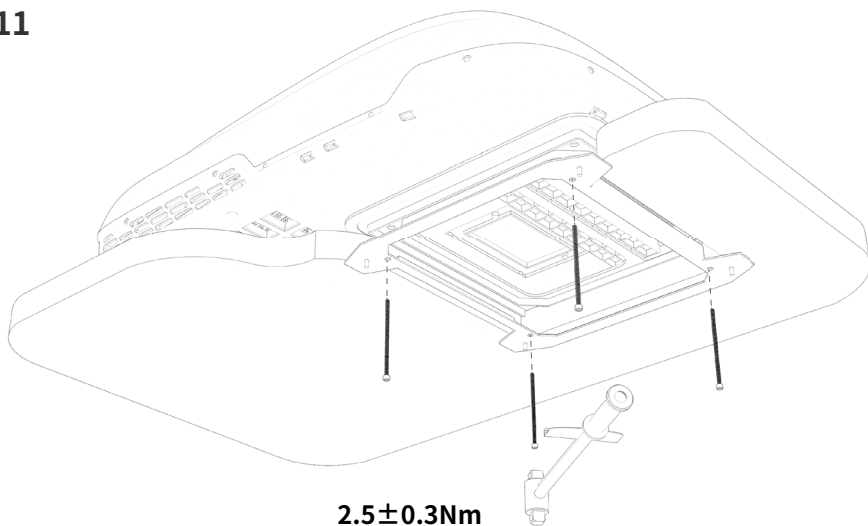


Note: All wiring must be done by qualified personnel and comply with the national and local wiring codes and/or regulations.

5.5 Installing discharge duct and mounting bracket

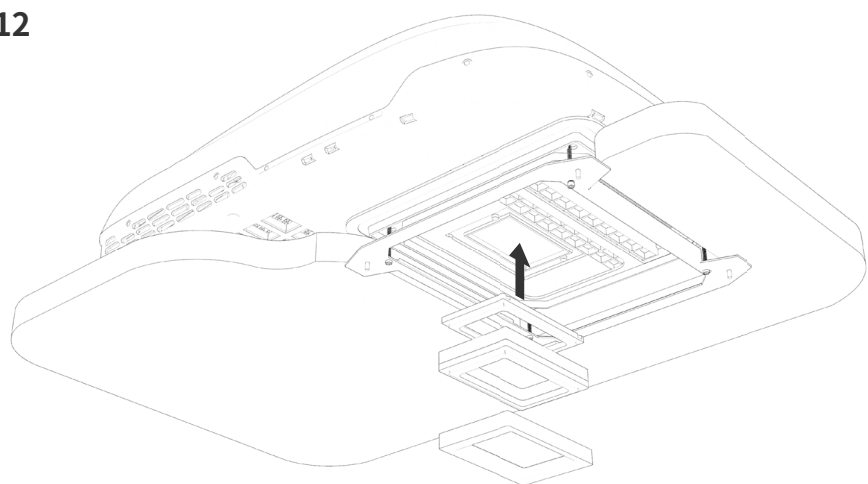
- Take out air diffuser, roof mounting bracket, air duct blocks and fasteners from the carton.
- Fasten the roof mounting bracket, roof mounting frame and rooftop air conditioner together with 4 long bolts M6 x 120mm, and the tightening torque is $2.5\text{Nm} \pm 0.3\text{Nm}$. See FIG.11.

11



- According to the thickness of the roof, determine how many air duct blocks to use, and then install the blocks to the air outlet on base pan of rooftop air conditioner. See FIG.12.

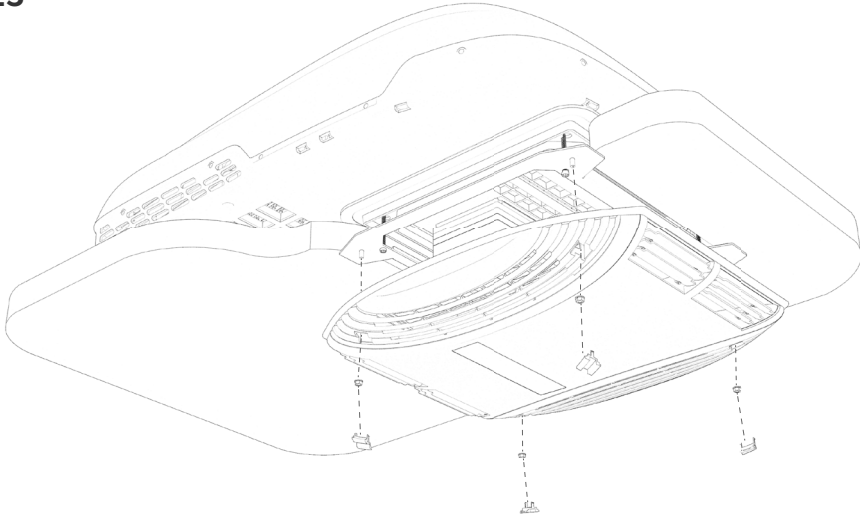
12



- Pull out the air filter and take out the communication cable from the air diffuser, connect it with the cable from the rooftop air conditioner.
- Install the air diffuser to roof mounting bracket with 4 nuts M6, then push the screw hole covers into the slots. See FIG.13.

EN

13

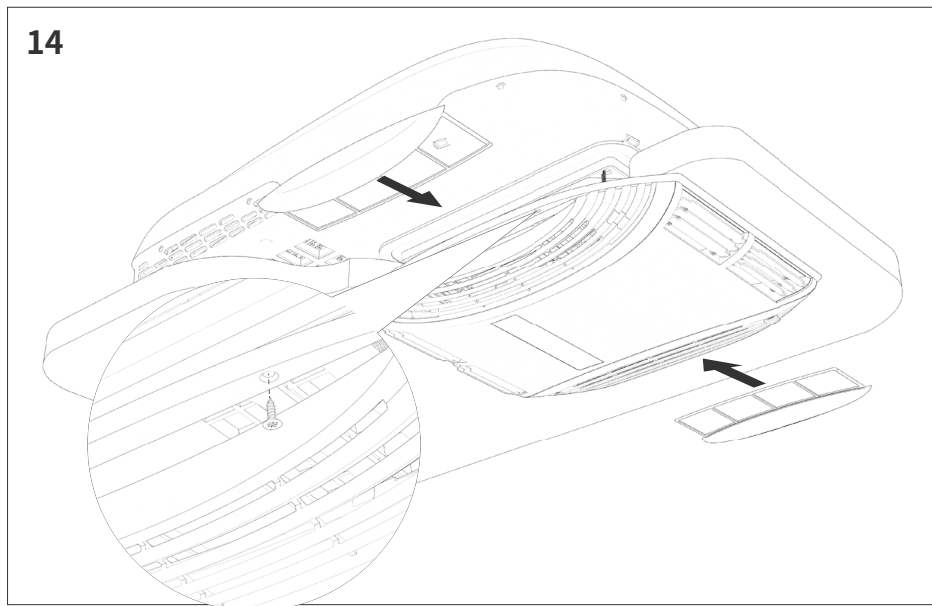


- If needed, the air diffuser can be fixed to the ceiling with 4 screws. Then push air filters into the correct place of air diffuser. See FIG.14.

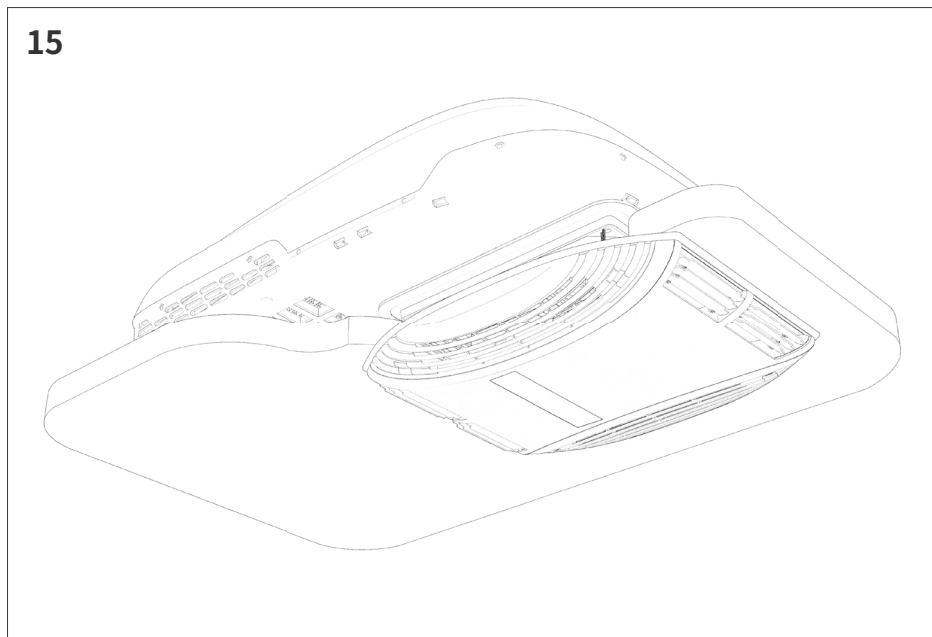
i NOTE!

- Check the thickness of the vehicle roof, the air duct is made of EPP material, which is divided into three parts: the bottom block, middle blocks and top block. The thickness of each middle block is 10mm, which is suitable for maximum 100mm roof thickness. Add or subtract the blocks as needed.

14



15



6.0 Initial use

6.1 Inspection before starting up

Before you switch on the rooftop air conditioner, observe the following:

- Check whether the supply voltage corresponds to the values specified in the data plate .
- Ensure both the air intake opening and the air nozzles are free. All ventilation grilles must always be kept free to ensure that the rooftop air conditioner is able to operate at maximum capacity.



ATTENTION!

- Do not insert your fingers or objects into the air nozzles or the intake grille.
Beware of injury!

6.2 Checking remote control and insert batteries






The battery compartment is located on the lower back of the remote control.

- Gently push down the sliding lid out of the guide slot and remove it.
- Insert the new batteries (2 x type AAA) in the remote control as indicated in the battery compartment.
- Push the sliding lid into the guide slot, and push up to close it.

7.0 Operating the rooftop air conditioner

7.1 Basic notes on operation

The following operations can be achieved by touching the control panel.















Operating mode	Features
On/Off	Press  to switch on the rooftop air, press and hold it for 3 seconds to switch it off.
Mode selection	Press  to select five operating modes in order, Automatic, Cooling, Dehumidification, Ventilation and Heating.
Fan speed adjusting	Press  one time, the fan speed will increase one level, and comes Auto after level 4.
Temperature adjusting	To set up the temperature by pressing  or  .

In addition to the above operations, the remote control can also perform the following operations:

- Sleep function
- Turbo function
- LED light
- Timer function
- Celsius/Fahrenheit conversion

7.2 Operating instructions of remote control

- The remote control lights up the display screen 2 seconds after the batteries are installed, and enters the standby state after displaying 16°C for 6 seconds.
- In the OFF state, exception the LED light and the power button, other buttons do not work, and the screen backlight will go out after 6 seconds.
- In the ON state, press the corresponding button to transmit the signal. Please note that the remote control needs to face the infrared receiver on the air diffuser.

Button	
On/Off	Press  , to power on or off the rooftop air conditioner.
Mode selection	Press  , to select five operating modes in order, Automatic, Cooling, Dehumidification, Ventilation and Heating.
Fan speed adjusting	Press  one time, the fan speed will increase one level, and comes Auto after level 4.
Sleep function	Press  , the compressor and fan will run at low speed. The initial temperature setting is 26 °C . You can adjust the temperature setting with  or  . The fan speed is locked at level 1, and can' t be adjusted. Press  again and return to normal mode.
Turbo function	Press  , the compressor and fan will run at the maximum speed, the temperature can be set by pressing  or  . The fan speed is locked at level 4, and can' t be adjusted. Press  again and return to normal mode.
LED light	Press  , to switch on or off the LED light on air diffuser.
Timer function	Press  , to set the Switch-Off time of the rooftop air conditioner. Each time you press it, the time will increase by 0.5 hours, and the maximum setting is 12 hours.
Celsius/Fahrenheit conversion	Press  to display Celsius or Fahrenheit.

8.0 Cleaning and maintenance



WARNING!

- Any other maintenance work to that which is described here may only be carried out by qualified personnel who are familiar with the risks involved when handling refrigerant and air conditioning systems as well as the relevant regulations.



ATTENTION! Beware of damage

- Do not clean the rooftop air conditioner with a high-pressure cleaner. Exposure to water can damage the rooftop air conditioner.
- Do not use sharp or hard objects or cleaning agents for cleaning as these may damage the rooftop air conditioner.
- To clean the rooftop air conditioner, use water with a gentle cleaning agent. Never use petrol, diesel or solvents.

Cleaning the rooftop air conditioner

- Clean the housing of the rooftop air conditioner and the air outlet unit occasionally with a damp cloth.
- Regularly remove leaves and other dirt from the ventilation grilles of the rooftop air conditioner. Make sure you do not damage the grilles in the process.
- Regularly clean the air filters on both side of air diffuser with warm water, and reinstall them after drying.
- Clean the remote control with a slightly damp cloth from time to time. We recommend using a cleaning cloth for glasses to clean the display.

Maintenance of the rooftop air conditioner

- Regularly check whether the condensation water drainage channels at the sides of the rooftop air conditioner are clear and the condensation water is able to escape.
- Check the seal between the rooftop air conditioner and the roof of the vehicle for cracks and other damage once per year.

9.0 Troubleshooting

If the rooftop air conditioner fails, the fault light on the upper right corner of the display will light up and the Error code will be displayed.

Error Code	Problem
E1	Exhaust temperature sensor failure
E2	Internal fan failure
E3	External fan failure
E4	Indoor temperature sensor failure
E5	Evaporator temperature sensor failure
E6	Condenser temperature sensor failure
E7	Outdoor temperature sensor failure
E8	PFC circuit failure
E9	Communication failure between the display board and the driver board
E10	Communication failure outside the controller
E11	Communication failure inside the controller
E12	Current hardware protection
E13	Current software protection
E14	Compressor rotor locked
E15	Compressor Stall
E16	Voltage undervoltage
E17	Voltage overvoltage
E18	Heating defrost failure
E19	System failure



NOTE!

- Please contact the supplier for further assistance, this equipment must be repaired by a professional.

10.0 Technical data

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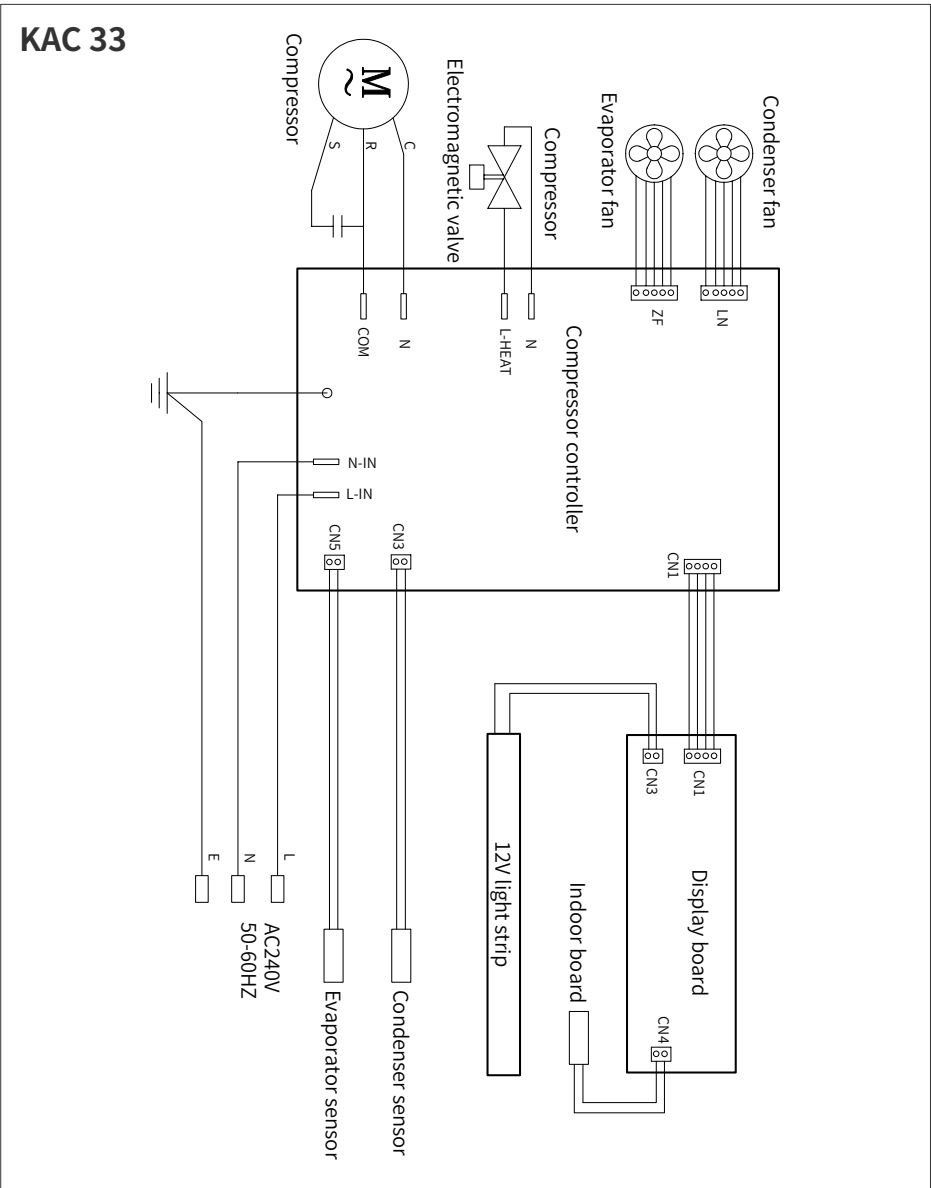
Model	KAC 33	KAC 36
Type	Constant speed	Inverter
Cooling capacity	3000W	3300W
Input power cooling	1050W	1240W
Heating capacity	2400W	2500W
Input power heating	780W	1050W
Rated input voltage	220V-240V/50Hz	
Starting current	14A	
Maximum current		7A
Power consumption in cooling mode	4.8A	5.6A
Power consumption in heating mode	3.6A	4.8A
Circuit protection	20Amp fuse or circuit breaker	
Cable section and length	2.5mm ² Copper and length not more than 8m	
Airflow	550m ³ /h	
Applicable temperature	-2°C~ 55°C	
Refrigerant	R410a	
Refrigerant quantity	560g	
Dimensions L x W x H	920 x 765 x 223mm	
Main unit Net/Gross weight	33.7Kg/39Kg	
Accessories Net/Gross weight	4.4Kg/5.6Kg	



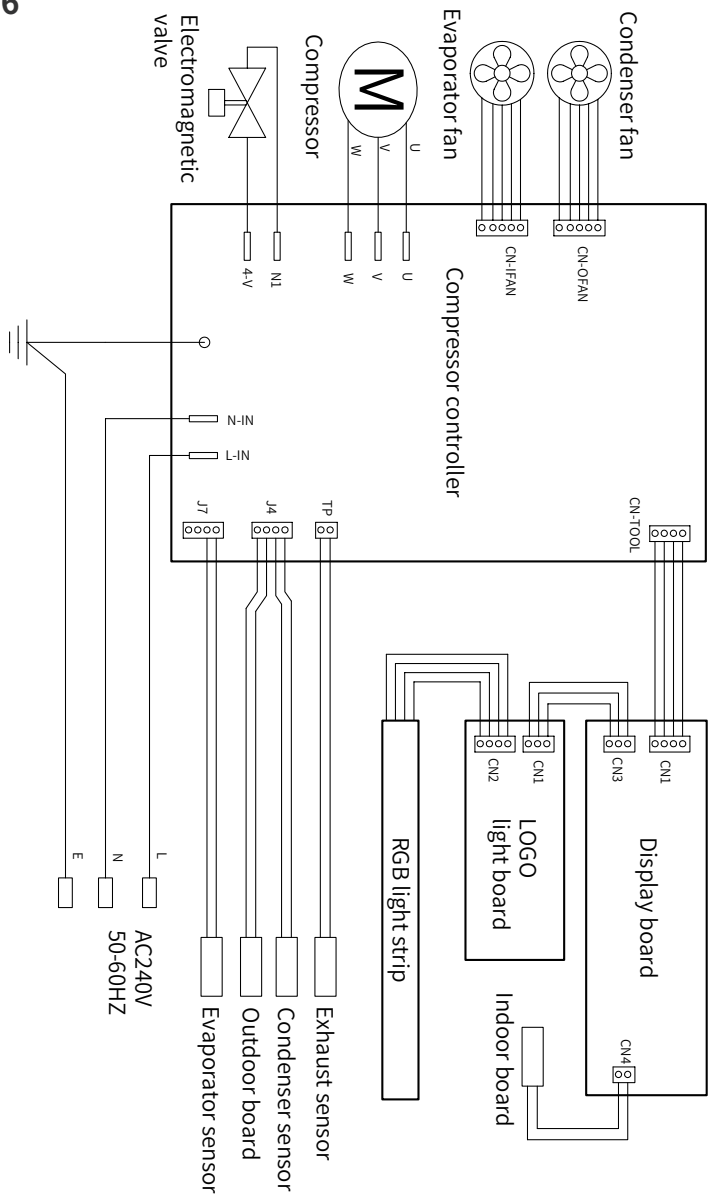
NOTE!

- To continuously improve our products, we reserve the rights to change some specifications without further notice, please check the data plate.

11.0 Wiring diagram



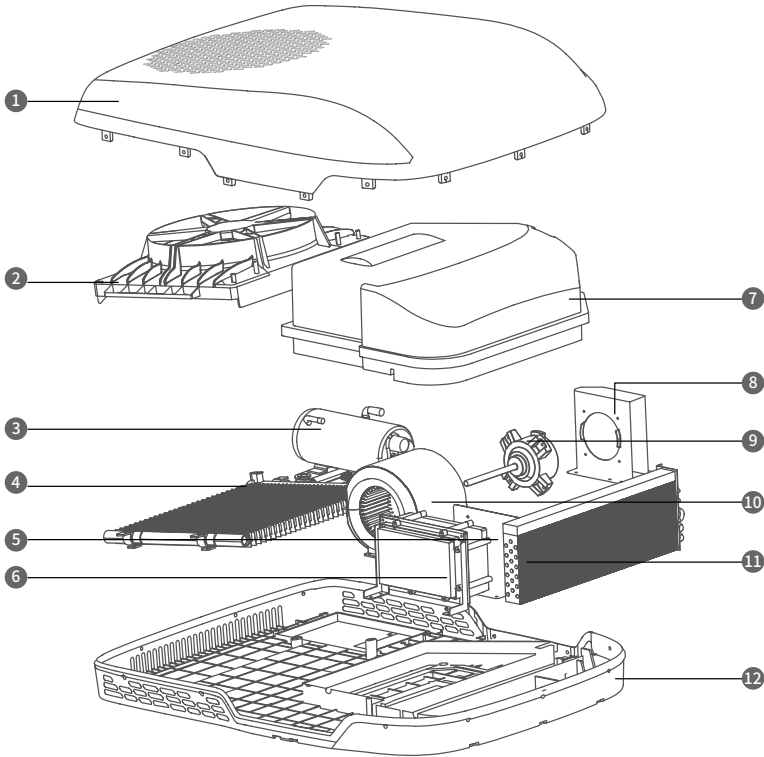
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12.0 Parts list

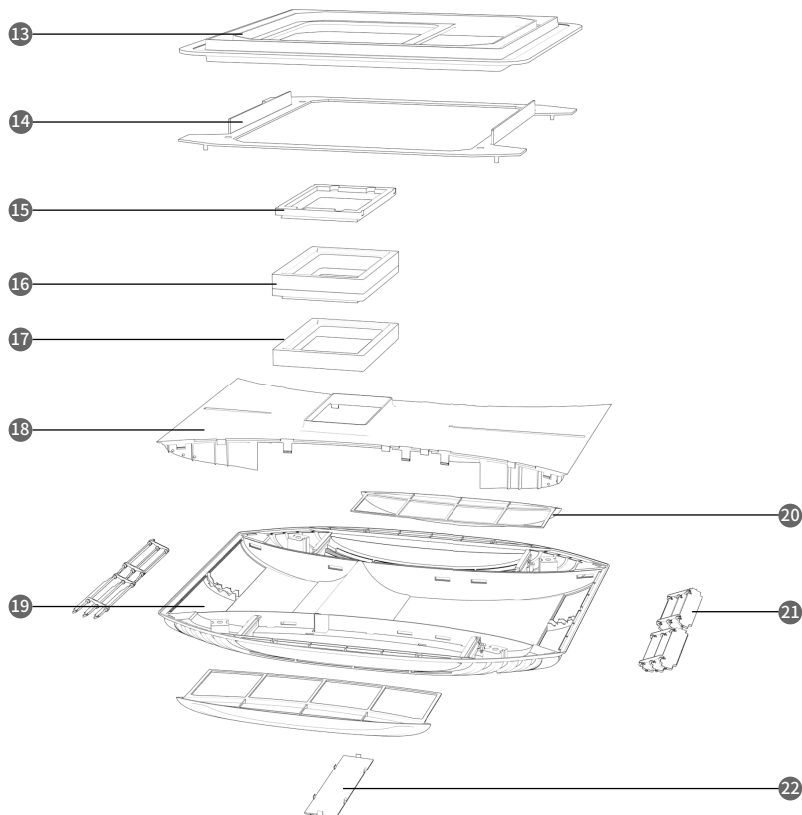
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1	Housing	7	Evaporator insulation foam
2	Condenser fan cover	8	Motor mount
3	Compressor	9	Motor
4	Condenser	10	Evaporator fan volute
5	Controller box hardware	11	Evaporator
6	Controller box	12	Base pan

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13	Roof mounting frame	18	Air diffuser base
14	Roof mounting bracket	19	Air diffuser
15	Air duct block-top	20	Air filter
16	Air duct block-middle	21	Blade
17	Air duct block-bottom	22	Control panel

13.0 Warranty

The statutory warranty period applies. If the product is defective, please contact the nearest supplier in your location. For repair and guarantee processing, please prepare the following documents:

- A copy of the invoice with purchasing date.
- A reason for the claim or description of the fault.

No warranty claim shall be applicable under the following circumstances:

- Damage, accident or otherwise, to the air conditioner while in the possession of the consumer not caused by a defect in material or workmanship.
- Damage caused by consumer misuse, tampering, or failure to follow the care and special handling provisions in the instructions.
- Damage to the finish of the case, or other appearance parts caused by wear.
- Damage caused by repairs or alterations of the air conditioner by anyone other than those authorized by the manufacturer.



KAC 33/36-0523.V01

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