

KAC-M646

4/3/2 CHANNEL POWER AMPLIFIER
INSTRUCTION MANUAL
4/3/2 声道功率放大器
使用说明书

Kenwood Corporation

Safety precautions

▲ WARNING

To prevent injury or fire, take the following precautions:

- Mounting and wiring this product requires skills and experience. For safety's sake, leave the mounting and wiring work to professionals.
- When extending the ignition, battery, or ground wires, make sure to use automotive-grade wires or other wires with the range of 5 mm² (AWG 10) or more to prevent wire deterioration and damage to the wire coating.
- To prevent a short circuit, never put or leave any metallic objects (such as coins or metal tools) inside the unit.
- If the unit starts to emit smoke or strange smells, turn off the power immediately and consult your Kenwood dealer.
- Do not touch the unit during use because the surface of the unit becomes hot and may cause burns if touched.

▲ CAUTION

To prevent damage to the machine, take the following precautions:

- Be sure the unit is connected to a 12V DC power supply with a negative ground connection.
- Do not open the top or bottom covers of the unit.
- Do not install the unit in a spot exposed to direct sunlight or excessive heat or humidity. Also avoid places with too much dust or the possibility of water splashing.
- When replacing a fuse, only use a new one with the prescribed rating. Using a fuse with the wrong rating may cause your unit to malfunction.
- To prevent a short circuit when replacing a fuse, first disconnect the wiring harness.

NOTE

- If you experience problems during installation, consult your Kenwood dealer.
- If the unit does not seem to be working right, consult your Kenwood dealer.

Cleaning the unit

If the front panel gets dirty, turn off the power and wipe the panel with a dry silicon cloth or soft cloth.

▲ CAUTION

Do not wipe the panel with a hard cloth or a cloth dampened by volatile solvents such as paint thinner and alcohol. They can scratch the surface of the panel and/or cause the indicator letters to peel off.

To prevent battery rise

When the unit is used in the ACC ON position without turning the engine ON, it depletes the battery. Use it after starting the engine.

Protection function

The protection function is activated in the following situations:

This unit is equipped with a protection function for protecting this unit and your speakers from various accidents or problems that can occur.

When the protection function is triggered, the power indicator goes off and the amplifier stops operating.

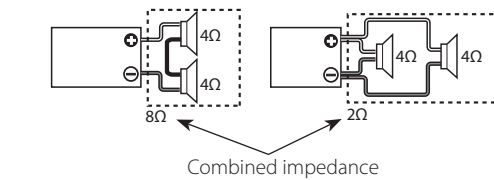
- When a speaker wire may be short-circuited.
- When a speaker output contacts ground.
- When the unit malfunctions and a DC signal is sent to the speaker output.

■ Wiring

- Take the battery wire for this unit directly from the battery. If it's connected to the vehicle's wiring harness, it can cause blown fuses etc.
- If a buzzing noise is heard from the speakers when the engine is running, connect a line noise filter (optional) to each of the battery wire.
- Do not allow the wire to directly contact the edge of the iron plate by using Grommets.
- Connect the ground wire to a metal part of the car chassis that acts as an electrical ground passing electricity to the battery's negative ⊖ terminal. Do not turn the power on if the ground wire is not connected.
- Be sure to install a protective fuse in the power cord near the battery. The protective fuse should be the same capacity as the unit's fuse capacity or somewhat larger.
- For the power cord and ground, use a vehicle type (fireproof) power wiring cord. (Use a power wiring cord with the range of 5 mm² (AWG 10) or more.)
- When more than one power amplifier are going to be used, use a power supply wiring wire and protective fuse of greater current-handling capacity than the total maximum current drawn by each amplifier.

■ Speaker Selection

- The rated input power of the speakers that are going to be connected should be greater than the maximum output power (in Watts) of the amplifier. Use of speakers having input power ratings that are less than the output power of the amplifier will cause smoke to be emitted as well as damage.
- The impedance of the speakers that are going to be connected should be 2Ω or greater (for stereo connections), or 4Ω or greater (for bridged connections). When more than one set of speakers are going to be used, calculate the combined impedance of the speakers and then connect suitable speakers to the amplifier.



安全注意事项

▲ 警告

- 为了防止受伤和火灾，请遵守下列注意事项。
- 安装本产品 and 连接导线需要一定的技能和经验。为了保证安全，应请专业人员完成安装和连接导线作业。
- 当延长蓄电池导线和接地导线时，请使用车辆 用导线或 5mm² (AWG 10) 以上的导线，以防 止导线劣化和被覆面的损伤。
- 为了防止短路等事故，请勿将金属物品（硬币，工具等）掉落在装置中。
- 万一装置冒烟或有异味时，请立即关闭电源，并与建伍经销商洽谈。
- 在使用中请尽量不要接触装置表面。因为装置在使用中表面发热会烫伤人体。

▲ 注意

- 为了防止装置发生故障，请遵守下列注意事项，正确操作和使用。
- 请以负接地线的12V直流电源向本装置供电。
- 请勿打开顶部和底部的盖子。
- 请勿将本装置安装在暴露于直射阳光，高温或高湿， 水 可能飞溅的或有灰尘的地方。
- 更换保险丝时，请更换规定容量相同的保险丝， 如使用不同容量的保险丝，可能会造成装置的故障。
- 更换保险丝时，为了防止短路事故，请先拔下电源线束再进行更换。

注

- 安装有困难时，请与建伍经销商洽谈。
- 如果仍不能恢复正常时，请与建伍经销商洽谈。

装置的保养

如果外表行驶时，请关闭电源，使用干燥的湿布或柔软的布匹擦拭。

▲ 注意

请勿使用硬布或涂料稀释剂，酒精等挥发性溶剂， 以免损坏外表面或将所附指示字符擦掉。

防止蓄电池全部放电

当本机在ACC ON位置使用而不开动发动机时，将消耗蓄电池的电量， 请在启动了发动机之后使用。

保护功能

在以下场合中保护功能被激活
本机装有保护功能，可以保护本机以及扬声器不会受到可能发生各种意外事故的损害。
当保护功能被触发时，电源指示灯将熄灭，放 大器也停止工作。
• 当扬声器线缆短路时。
• 当扬声器的输出接地时。
• 当本机出现误动作，有 DC（直流） 信号传送到扬声器输出端子。

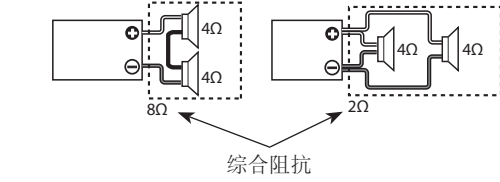
■ 接线

- 请将本机的蓄电池连接线直接与蓄电池连接。 如果与汽车的配线束连接，将产生烧毁保险丝等故障。
- 如果发动机运转时从扬声器中发出噪音，可以在蓄电池的每根连线上加一个线路噪音滤波器（选配件）。
- 使用保护套，以防线缆直接接触铁板的边缘。
- 将接地线连接到车架的金属部位，车架起到车辆电气接地的作用，将电流传递到蓄电池的负极⊖。 如果接地线没有连接就不要打开电源开关。
- 应务必在蓄电池附近的电源连接线上设置保险丝。 保险丝的规格应该与本机的保险丝容量相同或者略大。
- 对于电源连接线和接地线，请使用汽车用（防火）电源连接线。（请使用截面积为5mm² (AWG 10) 或者 以上的电源连接线。）
- 当使用多个功率放大器时，电源导线的电流容量及保险丝的容量要大于各个放大器的使用电流之和的最大值。

■ 扬声器选择


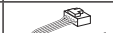
- 准备连接的扬声器的额定功率要大于放大器的最大输出功率。 如果扬声器的额定功率小于放大器的最大输出功率则会导致扬声器冒烟以至损坏。
- 所连接的扬声器的阻抗必须为 2 欧姆或更高（立体声连接时）；或者 4 欧姆或更高（桥接连接）。 当使用一组扬声器时，必须在计算扬声器的 总阻抗之后，再连接合适的扬声器。

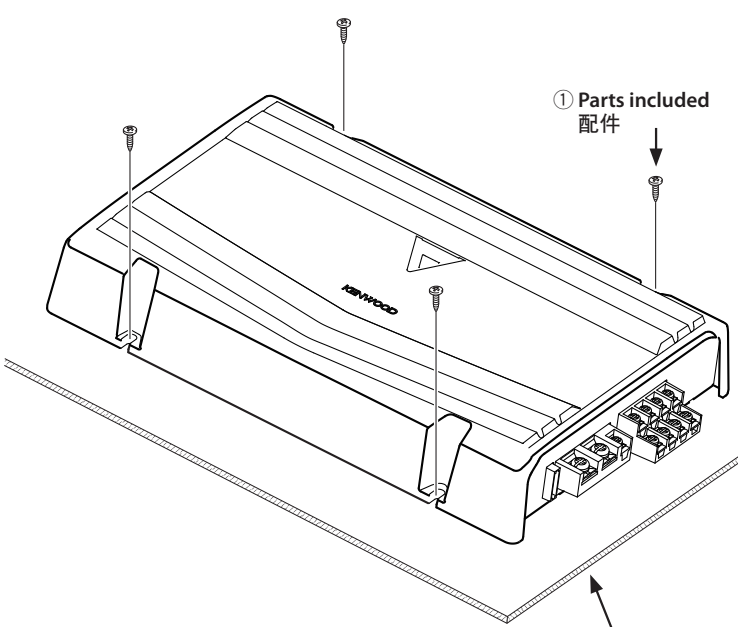
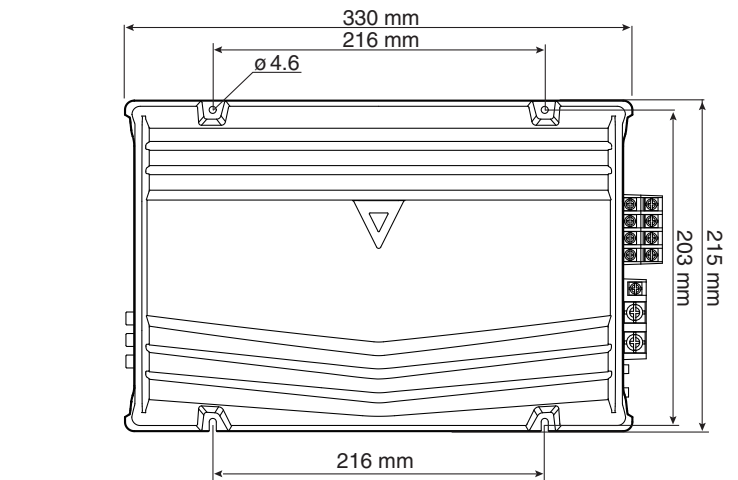
< 例 >



Installation / 安装

■ Accessories / 附件

①		Self-tapping screws / 自攻螺钉	4
②		Speaker level input cable / 扬声器音量输入电缆	1



Installation board, etc. (thickness: 15 mm or more)
安装基板，等（厚度：不小于 15 mm）

■ Installation procedure

Since there are large variety of settings and connections possible according to applications, read the instruction manual well to select the proper setting and connection.

- Remove the ignition key and disconnect the negative ⊖ terminal of the battery to prevent short circuits.
- Set the unit according to the intended usage.
- Connect the input and output wires of the units.
- Connect the speaker wires.
- Connect the power wire, power control wire and grounding wire following this order.
- Install the installation fittings in the unit.
- Attach the unit.
- Connect the negative ⊖ terminal of the battery.

▲ CAUTION

- Do not install in the below locations; (Unstable location, In a location that interferes with driving, In a location that gets wet, In a dusty location, In a place that gets hot, In a place that gets direct sunlight, In a location that gets hit by hot air)
- Do not install the unit under the carpet. Otherwise heat build-up occurs and the unit may be damaged.
- Install this unit in a location which allows heat to easily dissipate.
- Once installed, do not place any object on top of the unit.
- The surface temperature of the amplifier will become hot during use. Install the amplifier in a place where people, resins, and other substances that are sensitive to heat will not come into contact with it.
- When making a hole under a seat, inside the trunk, or somewhere else in the vehicle, check that there is nothing hazardous on the opposite side such as a gasoline tank, brake pipe, or wiring harness, and be careful not to cause scratches or other damage.
- Do not install near the dashboard, rear tray, or air bag safety parts.
- The installation to the vehicle should securely fasten the unit to a place in which it will not obstruct driving. If the unit comes off due to a shock and hits a person or safety part, it may cause injury or an accident.
- After installing the unit, check to make sure that electrical equipment such as the brake lamps, turn signal lamps and windshield wipers operate normally.

■ 安装步骤

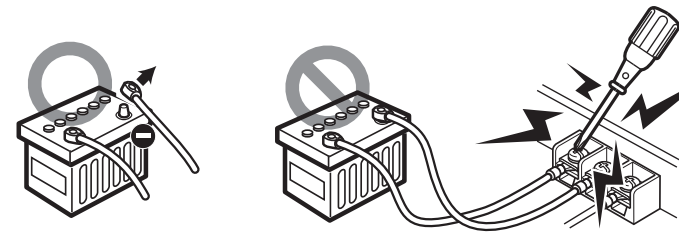
根据使用场合的不同，可能有多种不同的连接及设定方式请务必仔细阅读使用说明书，选择适当的连接和设定。

- 拔取点火钥匙，拆掉蓄电池负极⊖端子，以防短路。
- 根据使用目的，设置本机到妥当位置。
- 连接本机的输入和输出线缆。
- 连接扬声器线缆。
- 连接电源线，电源控制线缆及地线，不可违反此顺序。
- 向本机安装装配部件。
- 安装本机。
- 连接蓄电池的负极⊖。

▲ 注意

- 不得在下列位置安装：
（不稳定的位置，妨碍驾驶车辆的位置，潮湿的位置，灰尘较多的位置，受热的位置，阳光直射的位置，热气接触的位置）
- 不可将本装置安装在绒毯底下， 否则， 蓄热会导致本装置损坏。
- 将本装置安装在热量容易发散的地点，一旦安装完毕，不可在其上放置其它物品。
- 机器使用过程中，机体表面会发热升温， 所以其安装地点应该是人体，树脂及其它热敏感物质不易触及的地方。
- 在车座，行李箱底部或车子其它部位打孔时，应确认其背面有没有会受到损坏的物件，诸如油箱，刹车用配管或线路管套等， 千万不可擦伤或损坏这些物品。
- 不可安装在驾驶室仪表板，尾部底板或安全气囊等部件之上。
- 将本机安装在车内时，应确保固定牢靠，且不会对驾车造成妨碍， 如果因为冲击造成本机脱落且撞及人体或保险部件，就会导致伤害或事故。
- 在本装置安装之后，应该确认电气设备，比如刹车灯，转向信号灯以及雨刷等操作正常。

Connection / 连接



▲ WARNING

Particular attention must be given to making good electrical contact at the amplifier-output and speaker terminals. Poor or loose connections can cause sparking or burning at the terminals because of the very high power that the amplifier can deliver.

▲ CAUTION

- If sound is not output normally, immediately turn power off and check connections.
- Be sure to turn the power off before changing the setting of any switch.
- If the fuse blows, check wires for shorts, then replace the fuse with one of the same rating.
- Check that no unconnected wires or connectors are touching the car body. Do not remove caps from unconnected wires or connectors to prevent short circuits.
- Connect the speaker wires to appropriate speaker connectors separately. Sharing the negative wire of the speaker or grounding speaker wires to the metal body of the car can cause this unit to fail.
- After installation, check that the brake lamps, turn signal lamps and windshield wipers work properly.

▲ 警告

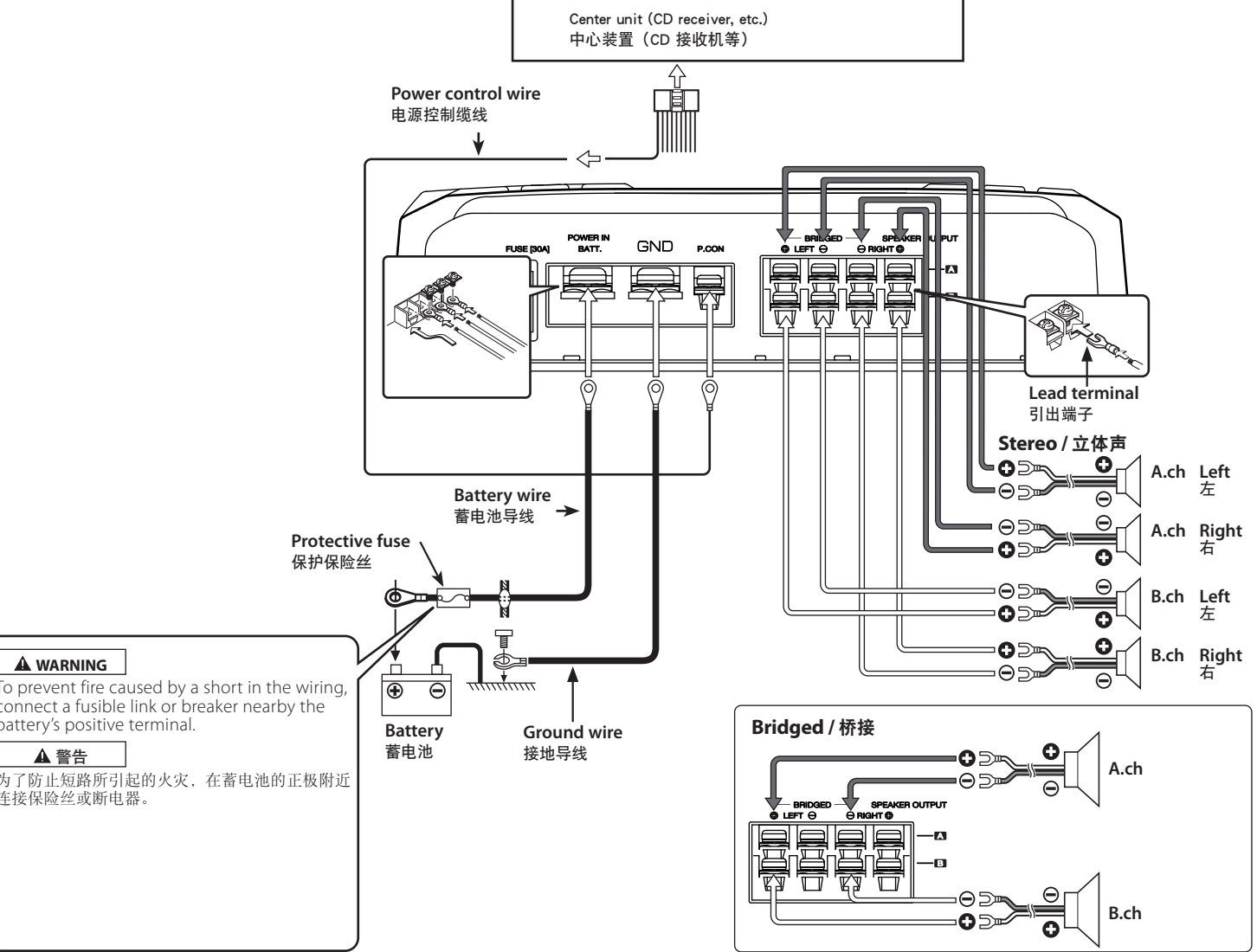
要特别注意放大器的输出口和扬声器端子处有良好的电气接触。因为放大器发出非常高的功率，松弛或不良的连接可能在端子处产生火花甚至燃烧。

▲ 注意

- 如果声音输出不正常，应立即关断电源并检查连接是否正确。
- 在变更开关的设定时，必须首先切断电源。
- 当保险丝熔断后，要检查线缆是否有短路，并更换上相同规格的保险丝。
- 检查是否有尚未连接的线缆或与车体相接触的端头。 未连接线缆及其端部的保护帽不可拆掉，以防短路。
- 扬声器的线缆要分别连接到各自的端子。 共用扬声器的负极线缆或将扬声器端子接地到汽车的金属部分，都会导致本机停止工作。
- 安装之后， 请检查汽车的刹车灯，方向指示灯，雨刷等是否正常工作。

■ Power wire and Speaker wire connection

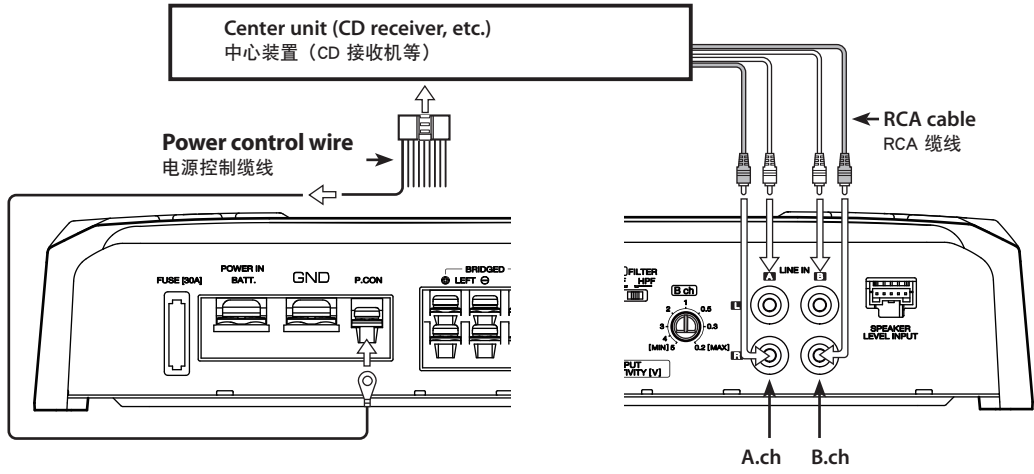
■ 电源线和扬声器线的连接



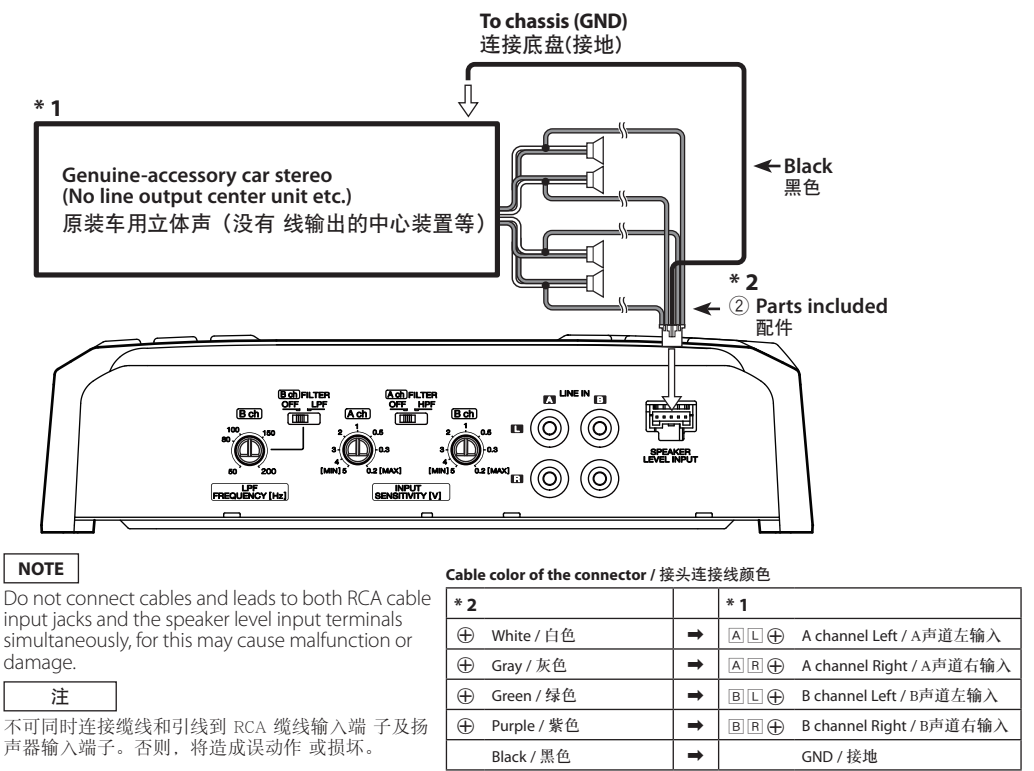
Connection / 连接

- **RCA cable or Speaker level input connection**
- RCA连接线或扬声器电平输入连接

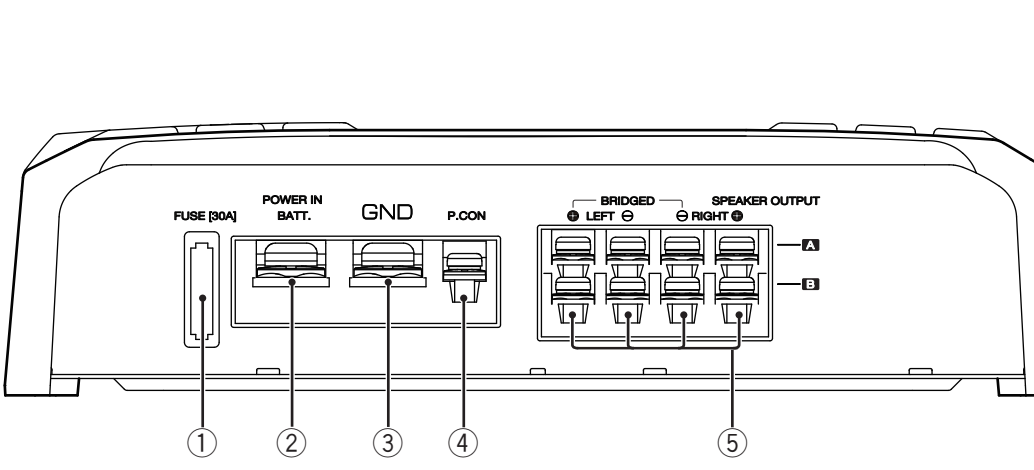
RCA cable connections / 连接RCA 缆线



Speaker level input connections / 连接扬声器电平输入



Controls / 控制



This is a 4 channel amplifier including 2 stereo amplifiers in a body. One amplifier is referred to as amplifier A and the other is amplifier B. This unit is compatible with a large variety of systems by combining the switches and functions described in the following.

① **Fuse (30 A)**
NOTE
If you can't find the specified capacity fuse at your store etc., consult your Kenwood dealer.

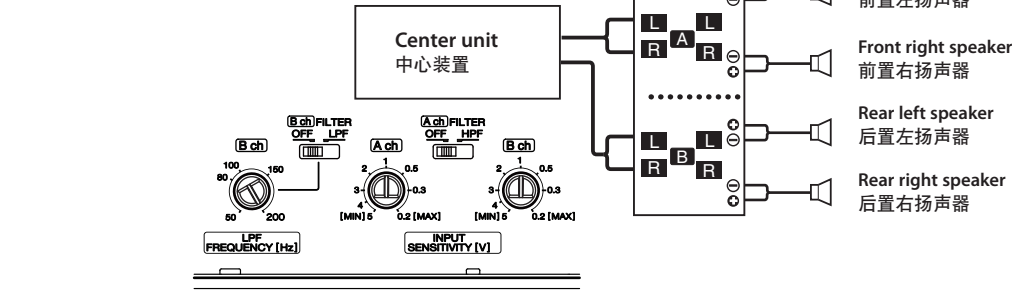
② **Battery terminal (POWER IN BATT.)**
③ **Ground terminal (GND)**
④ **Power control terminal (P.CON)**
Controls the unit ON/OFF.
NOTE
Controls the unit power. Be sure to connect it with all the systems.

⑤ **Speaker output terminals (A.ch/ B.ch)**

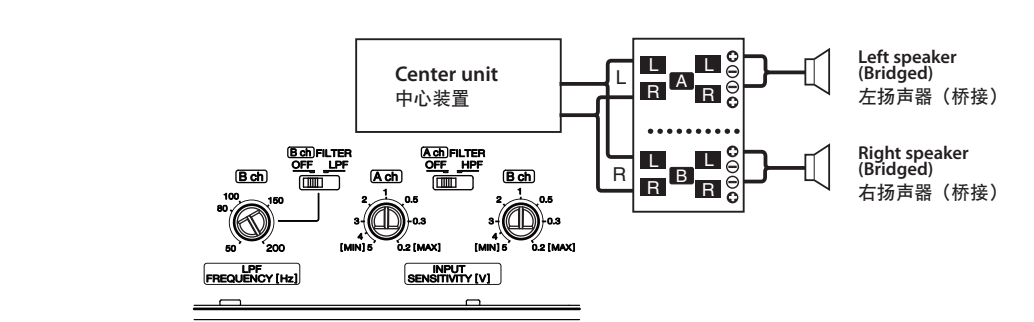
- **Stereo Connections:**
When you wish to use the unit as a stereo amplifier, stereo connections are used. The speakers to be connected should have an impedance of 2Ω or greater. When multiple speakers are to be connected, ensure that the combined impedance is 2Ω or greater for each channel.
- **Bridged Connections:**
When you wish to use the unit as a high-output amplifier, bridged connections are used. (Make connections to the LEFT channel ⊕ and the RIGHT channel ⊖ SPEAKER OUTPUT terminals.) The speakers to be connected should have an impedance of 4Ω or greater. When multiple speakers are to be connected, ensure that the combined impedance is 4Ω or greater.
- ⑥ **FILTER switch (B.ch)**
This switch allow filtering of the speaker output signals.
 - **LPF (Low-Pass Filter) position:**
The filter outputs the band of lower frequencies than the frequency set with the "LPF FREQUENCY" control.
 - **OFF position:**
The entire bandwidth is output without filtering.
- ⑦ **FILTER switch (A.ch)**
This switch allow filtering of the speaker output signals.
 - **HPF (High-Pass Filter) position:**
Only frequencies of 80 Hz or higher are output. (Frequencies below 80 Hz are cut.)
 - **OFF position:**
The entire bandwidth is output without filtering.
- ⑧ **LPF FREQUENCY control (B.ch)**
This control adjusts the frequency band output from this unit.

System examples / 系统配置实例

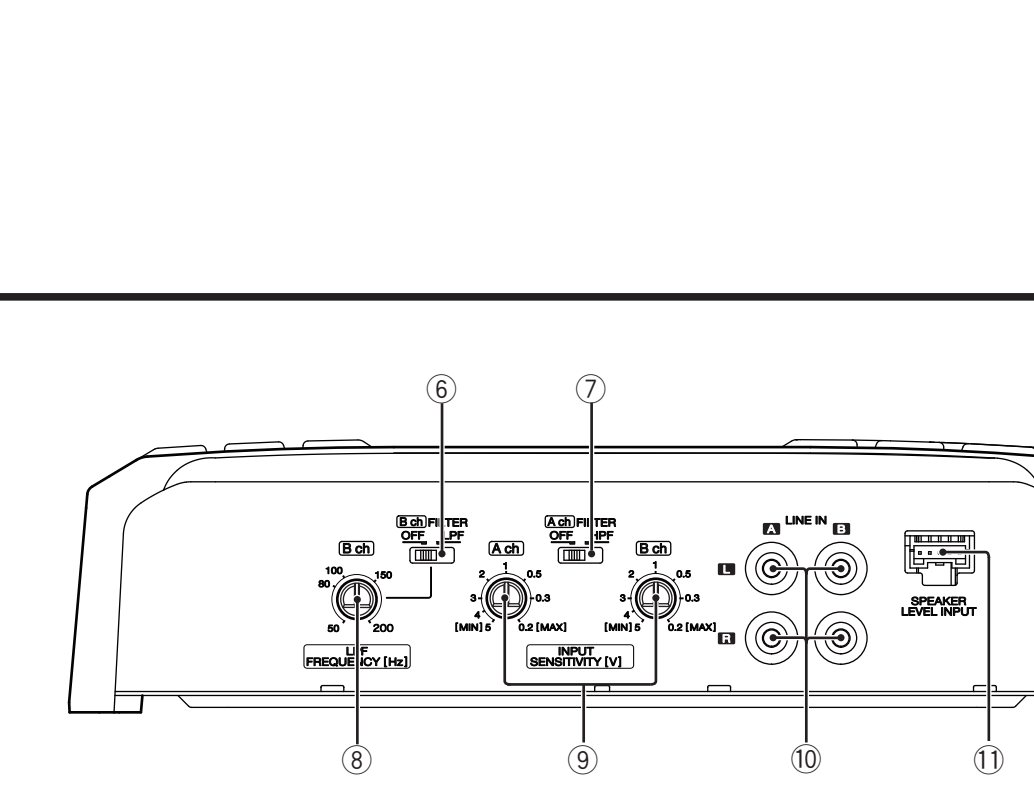
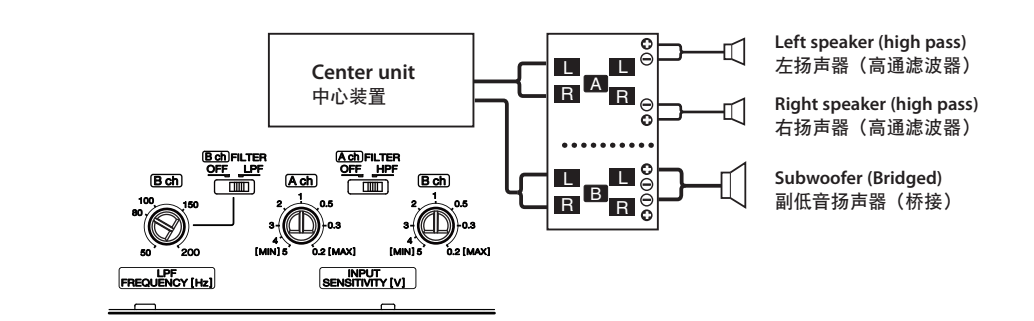
- **4-channel system**
- 4 声道系统



- **High-power 2-channel system**
- 大功率 2 声道系统



- **2-channel + Subwoofer system**
- 2 声道 + 副低音扬声器系统



本机为机体内搭载了2台立体声的4 声道放大器。其2台放大器之中一台称为A，另一台则称为B。如下所记，可以对应开关切换操作及各种功能组合系统。

① **保险丝 (30 A)**
注
万一在销售店等找不到指定容量的保险丝的话，请与建伍专销公司联系。

② **POWER IN BATT. (蓄电池) 端子**
③ **GND (接地) 端子**
④ **P.CON (电源控制) 端子**
控制本机的接通 / 关闭。
注
控制本机电源。 务必必与全部系统连接。

⑤ **SPEAKER OUTPUT (扬声器输出) 端子 (A.ch/B.ch)**

- **立体声连接端子:**
当您希望本机作为立体声放大器时，必须使用立体声连接端子。
- **所连接的扬声器的阻抗必须为 2 欧姆或更高。 当多个扬声器被连接时，必须保证每声道的综合阻抗大于或等于 2 欧姆。**
- **桥接连接端子:**
当您希望本机作为大功率放大器使用时，可以进行桥接连接。 (连接LEFT声道 ⊕、RIGHT声道 ⊖ 及SPEAKER OUTPUT 端子)
- **所连接的扬声器的阻抗必须为 4 欧姆或更高。 当多个扬声器被连接时，必须保证每声道的综合阻抗大于或等于 4 欧姆。**

⑥ **FILTER (滤波器) 开关 (B.ch)**
此开关可以过滤扬声器的输出信号。

- **LPF (低通滤波器) 位置:**
滤波器将输出低于 LPF FREQUENCY控制设定值的波段。
- **OFF (关闭) 位置:**
滤波器将不进行任何滤波处理。 输出整个波段。

⑦ **FILTER (滤波器) 开关 (A.ch)**
此开关可以过滤扬声器的输出信号。

- **HPF (高通滤波器) 位置:**
只让那些等于或高于 80 Hz 的信号通过。(低于 80 Hz 的信号被过滤掉。)
- **OFF (关闭) 位置:**
滤波器将不进行任何滤波处理。 输出整个波段。

⑧ **LPF FREQUENCY (低通滤波频率) 控制 (B.ch)**
可以调节本机的输出频带。

⑨ **INPUT SENSITIVITY (输入灵敏度) 控制 (A.ch/B.ch)**
根据与本机放大器连接的中心装置的前置输出电平调节本控制钮。

注
关于中心装置的前置输出电平，请参考其使用说明书。

⑩ **LINE IN (线输入) 端子 (A.ch/B.ch)**
⑪ **扬声器电平输入端子**
车内原装立体声的最大输出功率不得大于 40 瓦。

产品中有毒有害物质或元素的名称及含量

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
安装基板	×	○	○	×	○	○
框架	×	○	○	×	○	○
其他 (附件)	×	○	○	×	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

表示例

该标识中表示的数字为自生产日期开始对环境的保护期限、表示不会因产品中含有的有毒有害物质或元素的外泄造成环境污染、以及对人体或财产造成严重损害的年数。该环境保护期限并不是对于性能、功能的保证期限。

在产品 及 电池 等正常使用结束、进行废弃时，请遵守各地方政府的法律和规定予以处理。

Troubleshooting guide

What might appear to be a malfunction in your unit may just be the result of slight misoperation or miswiring. Before calling service, first check the following table for possible problems.

PROBLEM	POSSIBLE CAUSE	SOLUTION
No sound. (No sound from one side.) (Blown fuse.)	<ul style="list-style-type: none">Input (or output) cables are disconnected.Protection circuit may be activated.Volume is too high.The speaker cord is shorted.	<ul style="list-style-type: none">Connect the input (or output) cables.Check connections by referring to <Protection function>.Replace the fuse and use lower volume.After check the speaker cord and fixing the cause of the short, replace the fuse.
The output level is too small (or too large). The sound quality is bad. (The sound is distorted.)	<ul style="list-style-type: none">The input sensitivity adjusting control is not set to the correct position.The speakers wire are connected with wrong ⊕/⊖ polarity.A speaker wire is pinched by a screw in the car body.The switches may be set improperly.	<ul style="list-style-type: none">Adjust the control correctly referring to <Controls>.Connect them properly checking the ⊕/⊖ of the terminals and wires well.Connect the speaker wire again so that it is not pinched by anything.Set switches properly by referring to <System examples>.

故障检修

有时被认为是故障的现象，其实是因微小的操作或配线失误而造成。在要求维修之前，请参照下表稍微检查为盼。

现象	原因	排除方法
没有声音 (保险丝跳断)	<ul style="list-style-type: none">输入（或输出）缆线未连接。保护线路可能被触发。音量过大。扬声器电线短路。	<ul style="list-style-type: none">连接输入（或输出）缆线。参考<保护功能>一节，检查连接状况。请更换保险丝，减小音量。确认扬声器线，解除短路原因后，更换保险丝。
输出电平过低（或过高） 声音质量很差 (声音失真)	<ul style="list-style-type: none">输入灵敏度调节不当，没有位于妥当位置。扬声器电线的极性⊕/⊖连接错误。扬声器电线的一根被车体螺钉压迫。开关の設定可能不妥。	<ul style="list-style-type: none">调节该控制器。请参考<控制>。请将电线的极性⊕/⊖连接正确。重新连接缆线，使之不再受螺钉压迫。请参考<系统配置实例>，将开关正确设置。

Specifications

Specifications subject to change without notice.

Audio section		
Max power output.....	500 W (125 W × 4)	Low pass filter frequency (-18 dB/oct.) (B channel)
Rated power output (+B = 14.4V)	50 Hz ~ 200 Hz (variable)
Normal (4 Ω)	40 W × 4 (20 Hz ~ 20 kHz, ≤ 1.0 % THD)	High pass filter frequency (-12 dB/oct.) (A channel).....
Normal (2 Ω)	60 W × 4 (1 kHz, ≤ 1.0 % THD)	80 Hz
Bridged (4 Ω)	130 W × 2 (1 kHz, ≤ 1.0 % THD)	
Speaker impedance.....	2 Ω ~ 8 Ω	
Frequency response (+0, -3 dB).....	5 Hz ~ 50 kHz	
Sensitivity (RCA).....	0.2 V ~ 5.0 V	
Signal to noise ratio.....	95 dB	
Input impedance.....	10 kΩ	

规格

规格可能会变更，恕不另行通知。

音频部		
最大输出功率	500 W (125 W × 4)	低通滤波器过滤频率 (-18 dB/oct.) (B声道)
额定输出功率 (+B = 14.4V)	50 Hz ~ 200 Hz (可变)
普通 (4 Ω) (20 Hz ~ 20 kHz, ≤ 1.0 % THD).....	40 W × 4	高通滤波器过滤频率 (-12 dB/oct.) (A声道).....
普通 (2 Ω) (1 kHz, ≤ 1.0 % THD).....	60 W × 4	80 Hz
桥接 (4 Ω) (1 kHz, ≤ 1.0 % THD).....	130 W × 2	
扬声器阻抗	2 Ω ~ 8 Ω	
频率响应 (+0, -3 dB).....	5 Hz ~ 50 kHz	
灵敏度 (RCA).....	0.2 V ~ 5.0 V	
信噪比	95 dB	
输入阻抗	10 kΩ	

共同		
使用电压	14.4 V (允许11 - 16 V)	
消耗电流	20 A	
安装尺寸 (宽×高×深)	330 × 55 × 215 mm	
重量	2.6 kg	