

4-CHANNEL POWER AMPLIFIER

KAC-745

INSTRUCTION MANUAL

KENWOOD

KENWOOD CORPORATION

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Take the time to read through this instruction manual. Familiarity with installation and operation procedures will help you obtain the best performance from your new 4-channel power amplifier.

For your records

Record the serial number, found on the back of the unit in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your KENWOOD dealer for information or service on the product.

Model

KAC-745

Serial number: _____

Safety precautions

▲ WARNING

Take the following precautions to prevent fire and avoid personal injury :

- When extending the power supply cable, memory backup cable, or ground cable, use 3mm² (AWG12) or larger automotive grade cable to avoid cable deterioration or damage to the covering.
- Check that no metal objects (coins, tools, etc.) are left inside the unit to avoid short circuits.
- If you smell or see smoke, turn the power off 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

Take the following precautions to keep the unit in proper working order.

- Be sure the unit is connected to a 12V DC power supply with a negative ground connection.
- Do not open the top or bottom cover.
- Do not install the unit in places it is exposed to direct sunlight, high heat or humidity, water may splash over it, or dust exists.

NOTE

- If you have difficulty in installing this unit in your vehicle, contact your Kenwood dealer.

Cleaning the unit

- If the surface is dirty, wipe it clean with a silicon cloth or soft dry cloth with the power off.

▲ CAUTION

Do not use hard cloths or paint thinner, alcohol, or other volatile solvents. These may damage external surfaces or remove indicator characters.

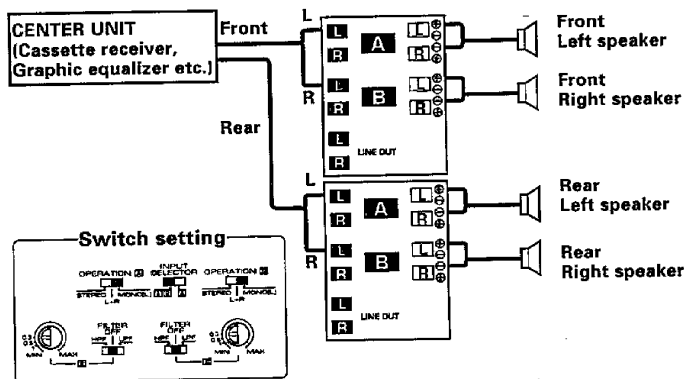
FCC WARNING

This equipment generates and uses radio frequency energy. Changes or modifications other than those expressly approved in the instruction manual may cause interference with radio and television reception. Unauthorized changes may lead to the user's loss of the authority to operate this equipment.

System Examples

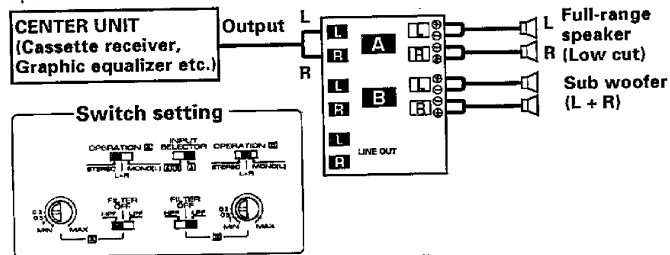
■ System example 1.

When two KAC-745 are used as 2-channel amplifiers, a high power 4-channel amplifier can be configured.



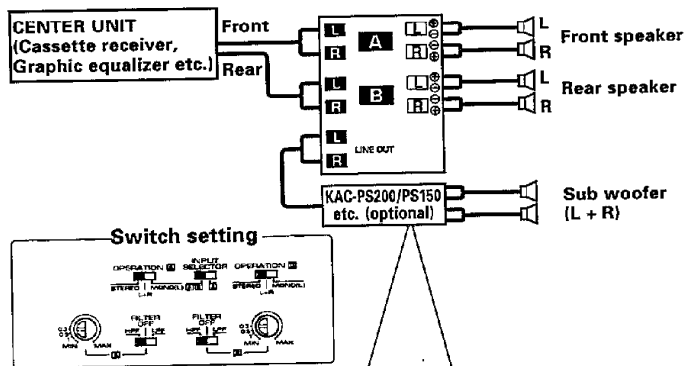
■ System example 2.

A multi-amp system is configured with a single unit by sending the output from amplifier A through the high pass filter for use as the signal for the high frequency speaker and sending the output from amplifier B through the low pass filter for use as the signal for the low frequency speaker.



■ System example 3.

Addition of subwoofer speaker using the Line output signals.

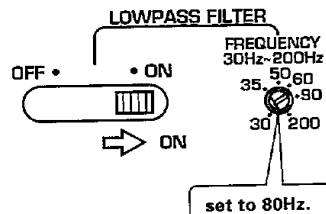


■ Set the Low pass filter switch to ON and set the frequency control to the 80 Hz position.

NOTE

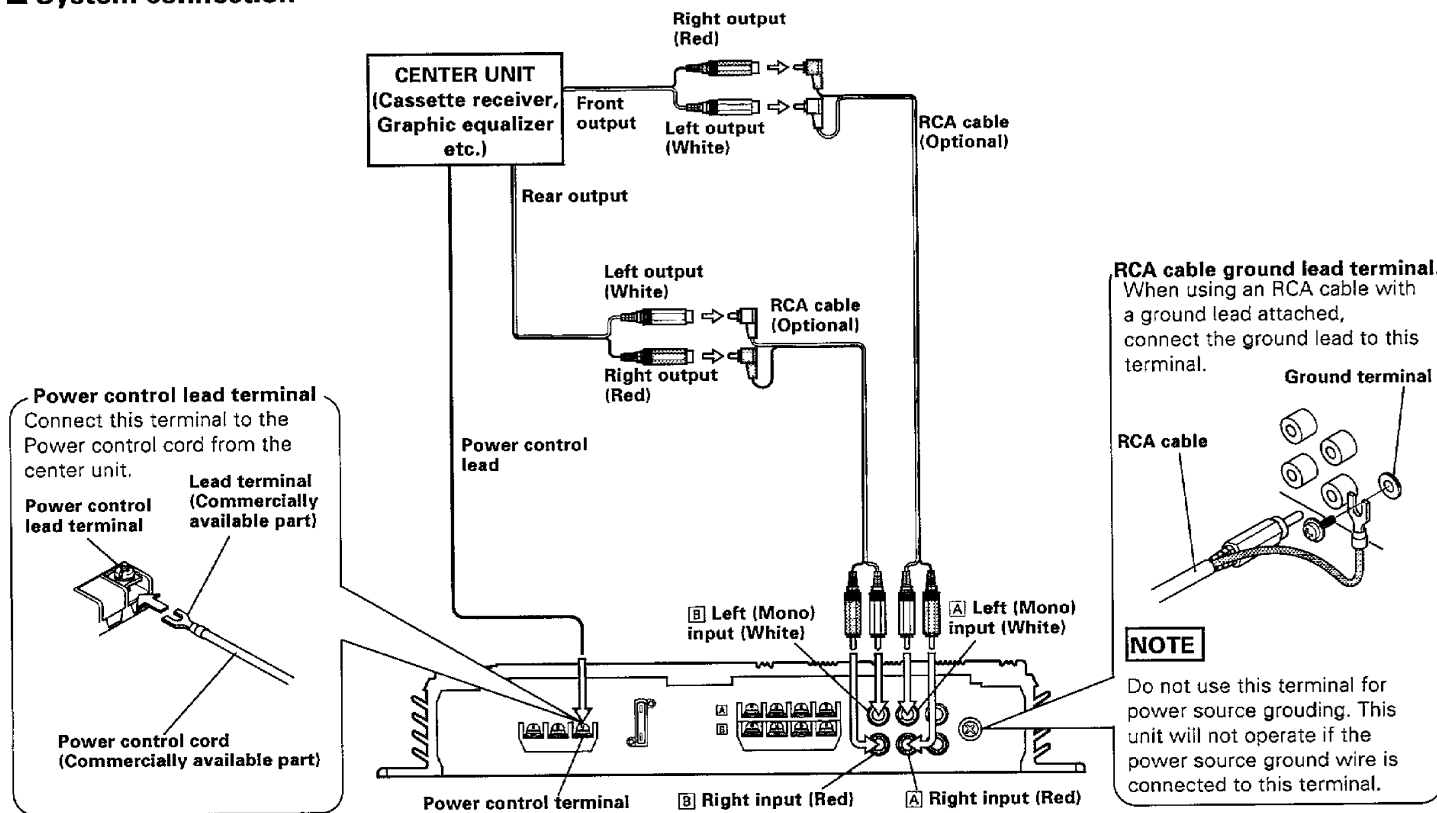
- Use a power amplifier equipped with the low pass filter function (KAC-PS200/PS150, etc.).
- For details on the system connection, power connection, etc., please refer to the instruction manual provided with your power amplifier.

<Low pass filter adjustment>



Connections

■ System connection

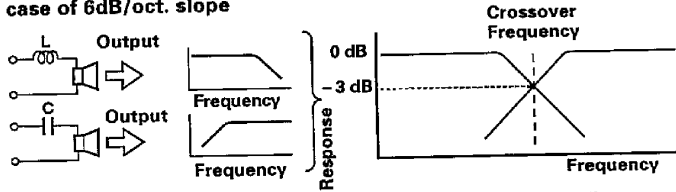


Tri-mode

With the KAC-745, a subwoofer can be added easily to the speaker system by making use of the properties of coils and capacitors. This mode of operation is called Tri-mode.

■ Principle of Tri-mode

- Method of frequency band division using a coil and capacitor ...in case of 6dB/oct. slope



- Coil (L) : Passes low frequencies and blocks high frequencies. (Low pass)
- Capacitor (C) : Passes high frequencies and blocks low frequencies. (High pass)

● Your coil and capacitor

Use the following formula to identify the coil and capacitor you need in your system.

Example: When it is required to set a crossover frequency of 120 Hz using speakers with an impedance of 4 ohms,

$$C = \frac{159000}{f_c \times R} (\mu F) \quad L = \frac{159 \times R}{f_c} (mH) \quad \begin{matrix} f_c = \text{Crossover Frequency (Hz)} \\ R = \text{Speaker Impedance } (\Omega) \end{matrix}$$

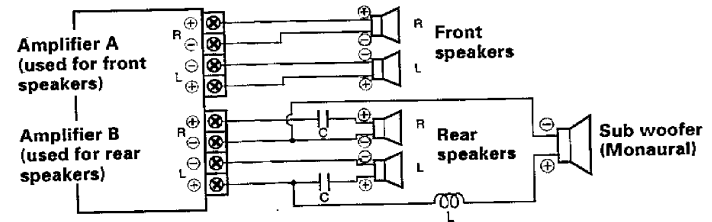
Prepare commercially-available coil and capacitor with the closest ratings to the results calculated from the formula above. The capacitor rating should be as close as possible to 331.25 (μF) and the coil rating should be as close as possible to 5.3 (mH).

▲ CAUTION

Compose the speaker system so that the overall speaker impedance seen from the amplifier unit is no less than 4 ohms. If the impedance is less than 4 ohms, excessive current may flow and the amplifier unit may be damaged.

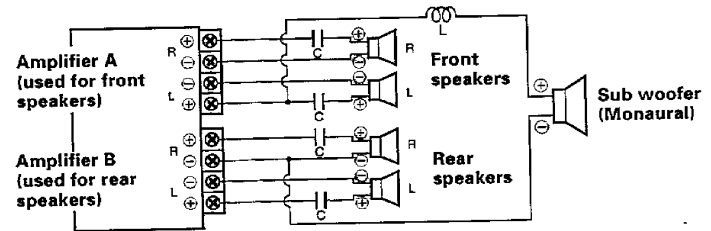
■ System Examples

- When a sub woofer is added to the rear speaker system



* The sub woofer is not affected by the controls on the center unit.

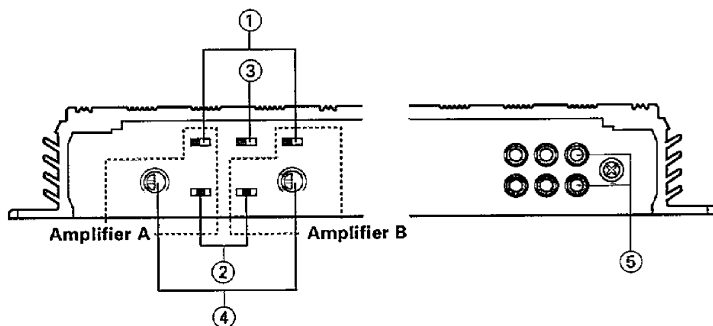
- When a sub woofer is added to the whole speaker system



Controls

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 OPERATION switch

This switch allows to select the amplification method of input signals.



● STEREO position:

The input left and right signals are amplified separately. Use this position when the unit is used as a stereo amplifier.

● L + R position:

The input left and right signals are combined before being amplified. Use this position when the unit is used for subwoofer speakers or the L + R (monaural) sound is required.

● MONO (L) position:

The input left signal is amplified twice the normal boost level. Use this position when the unit is used as a high-power monaural amplifier.

(The input right signal is not output.)

② FILTER switch

This switch allows to apply a filter to the output signals.



● HPF (High-Pass Filter) position (12dB/oct.):

Only frequencies of 80 Hz or higher are output. (Frequencies below 80 Hz are cut.)

● LPF (Low-Pass Filter) position (12dB/oct.):

Only frequencies of 80 Hz or lower are output. (Frequencies above 80 Hz are cut.)

③ INPUT SELECTOR

This switch selects the input method of the signals to be amplified by amplifiers A and B.



● A B position:

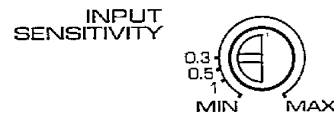
Amplifies both of the signals input to amplifiers A and B.

● A position:

Amplifies only the signal input amplifier A with both amplifiers A and B.

④ Input sensitivity control

Adjust this control according to the pre-out level of the center unit connected to this unit.



NOTE

Refer to "Specifications" on the center unit's instruction manual about the pre-out level.

Center unit pre-out level	Amplifier input sensitivity
300 mV	MAX (0.15 V)
800~1000 mV	0.3 V
1.5 V	0.5 V
2~4 V	1.0 V

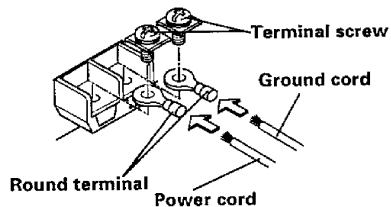
⑤ Line outputs

These jacks output respectively the signals input to amplifiers A and B. They always output the stereo signals regardless of the position of the OPERATION switch.

■ Power and Speakers lead connection

Power cord terminal

Connect the Power cord and Ground cord to the corresponding terminals.



Power terminal

Ground terminal

If a buzzing noise is heard from the speakers when the engine is running, attach a line noise filter (sold separately) to the power cord.

Power cord

Ground cord

▲ WARNING

To prevent fire caused by a short in the wiring, connect a fusible link or breaker nearby the battery terminal.

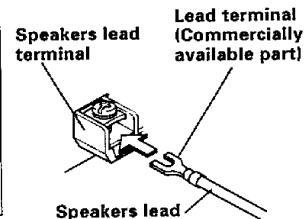
Battery

NOTE

Connect the ground leads to a metal part of the car chassis that acts as an electrical ground passing electricity to the battery's minus \ominus terminal.
Do not turn the power ON if the ground leads are not connected.

Speaker lead terminal

Connect the speaker leads to these terminals.



▲ Front Left speaker

▲ Front Right speaker

■ Rear Right speaker

■ Rear Left speaker

Operation switch	Speaker terminal polarity			
STEREO position	L ⊕	L ⊖	R ⊖	R ⊕
L + R position	⊕	⊖	⊖	⊕
MONO (L) position	⊕	—	⊖	—


Installation procedure

1. Remove the ignition key and disconnect the negative (-) terminal of the battery to prevent short circuits.
2. Connect the input and output cables of the units.
3. Connect the speaker cables.
4. Connect the ground cable and power supply cable in the order listed.
5. Install the unit in the car.
6. Connect the negative (-) terminal of the battery.

▲ CAUTION

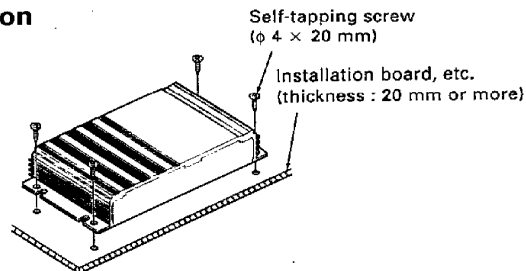
- If the fuse blows, check cables for shorts, then replace the fuse with one of the same rating.
- Check that no unconnected cables or connectors are touching the car body. Do not remove caps from unconnected cables or connectors to prevent short circuits.
- Connect the speaker cables to appropriate speaker connectors separately. Sharing the negative cable of the speaker or grounding speaker cables to the metal body of the car can cause this unit to fail.
- After installation, check that the brake lamps, wipers, and wipers work properly.

Accessories

Part name	External View	Number of Items
Self-tapping screws ($\phi 4 \times 20$ mm)		4

Installation

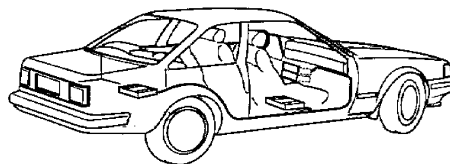
■ Installation



▲ CAUTION

Do not install the unit under the carpet. Otherwise heat build-up occurs and the unit may be damaged.

■ Installation location



- Since the power amplifier has no parts which require operation, it can be installed at a position away from the driver's seat without any hindrances.
- As generally accepted positions for its installation, places such as inside the trunk, etc. can be considered.

▲ CAUTION

- Install this unit in a location which allows heat to easily dissipate. Once installed, do not place any object on top of the unit.
- After installing the unit, check to make sure that electrical equipment such as the brake lamps, turn signal lamps and windshield wipers operate normally.
- Install the unit securely in a location that does not interfere with driving.

Troubleshooting guide

Often, what appears to be a malfunction is due to user error. Before calling for service, please consult the following table.

Symptom	Cause	Remedy
No sound. (No sound from one side.)	A speaker cord has become unconnected.	Check the speaker cord connections.
The level is too low (or high).	The input sensitivity adjusting knob is not set to the correct position.	Adjust correctly referring to "Controls".
The sound quality is bad. (The sound is distorted.)	The speakers are connected to the same wires.	Connect each speaker terminal to its respective speaker output.
	A speaker cord is pinched by a screw in the car body.	Check the speaker wiring.

Specifications

Specifications subject to change without notice.

Audio Section

Max Power Output (4 Ω)

4 Channel Mode	80 W × 4
3 Channel Mode	80 W × 2 ÷ 160 W
2 Channel Mode	160 W × 2

Rated Power Output (4 Ω)

4 Channel Mode	40 W × 4 (20 Hz~20 kHz, less than 0.08% THD)
3 Channel Mode	40 W × 2 (1 kHz, 0.08% THD) + 110 W × 1 (1 kHz, 0.8%)
2 Channel Mode	110 W × 2 (1 kHz, 0.8%THD)

Rated Power Output (2 Ω)

4 Channel Mode	55 W × 4 (1 kHz, 0.8%THD)
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Frequency Response 2 Hz ~ 45 kHz (-3 dB)

Signal to Noise Ratio 100 dB

Sensitivity (MAX.) 0.15 V (rated output)

Sensitivity (MIN.) 3.0 V (rated output)

Input Impedance 10 kΩ

Damping Factor (100 Hz) More than 100

High Pass Filter Frequency ..80 Hz (12 dB / oct.)

Low Pass Filter Frequency ...80 Hz (12 dB / oct.)

General

Operating Voltage 14.4 V (11 ~ 16 V allowable)

Current Consumption

(1 kHz, 10% THD) 25 A

Dimensions (W × H × D)280 × 50 × 230 mm

Weight 3.0 kg