

OPERATING MANUAL

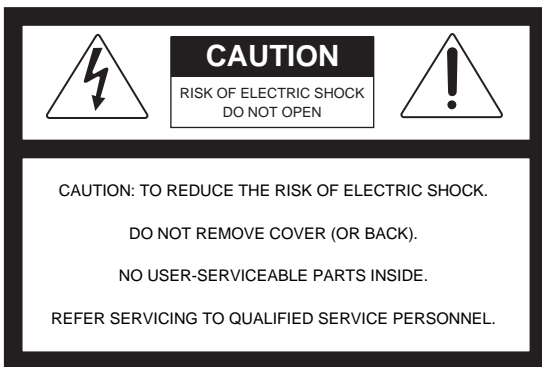
Q U A D
AMPLIFIER

QD-4240/4480

interM

UNPACKING AND INSTALLATION

Although it is neither complicated to install nor difficult to operate your power Amplifier, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its many features and how to use them. Please take a great care in unpacking your set and do not discard the carton and other packing necessary to return your set for when moving your set and are required if it ever becomes necessary to return your set for service. Never place the unit near radiators, in front of heating vents, to direct sun light, in excessive humid or dusty location to avoid early damage and for your years of quality use. Connect your complementary components as illustrated in the following page.



WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Attentions: Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.

FEATURES

- **4 CHANNEL AMPLIFIER**

These quad amplifier has 4CH Amplifier circuit in the one unit.

- **SUBSTANTIAL PROTECTION CIRCUITARY**

To insure stability and reliability against over current and overheating extra protection circuitary is provided. In addition, turn on delay and DC detection circuitary is provided to protect the loud-speaker.

- **BRIDGED MONO FUNCTION**

These quad amplifiers can be used for monoral powerful sound by selecting the mode switch.

- **VARIOUS DISPLAY**

To confirm the operating status, LED displays of protection, clip, and signals are provided on front panel.

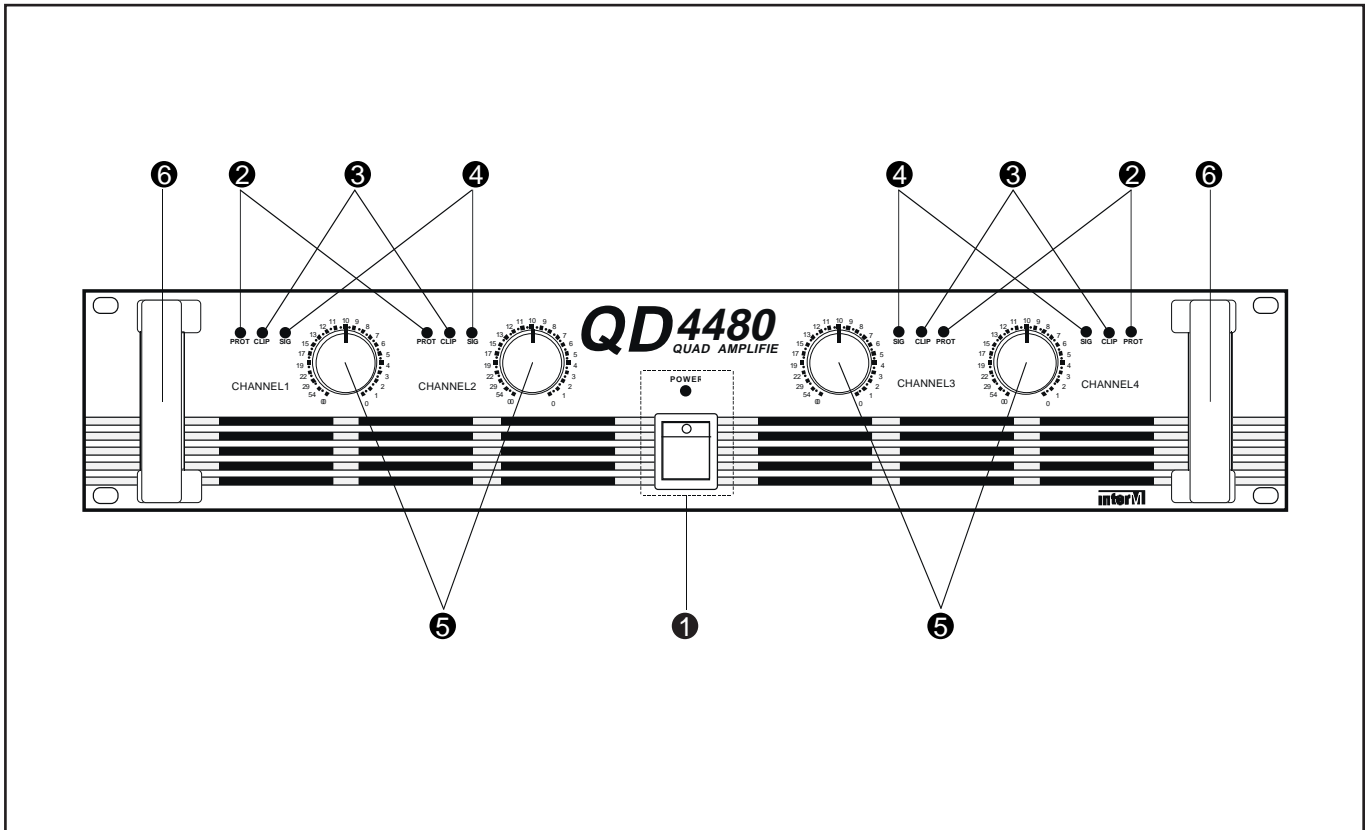
- **COMPACT SIZE**

For valuable saving in rack space and slim exterior view, these amplifier is designed within compact size.

APPLICATION

- Home theater/multimedia
- Surround Sound-play back or Mix
- Stereo system with subwoofer
- Distributed sound installations

FRONT PANEL CONTROLS



1. POWER SWITCH AND INDICATOR

Lights whenever the QD-4240/4480 is powered on use this to power the QD-4240/4480 on or off.

2. PROTECTION INDICATOR

This red LED indicator lights up for approximately six seconds when the amplifier is powered ON, indicating that the soft-start protection system is working. No sound is output during soft-start up. If one of the protection systems is activated during normal use, this indicator lights up and no sound is output. The speaker system is actually disconnected from the amplifier outputs when this indicator lights up. The protection systems are activated when overheating occurs or a DC voltage is present at the amplifier outputs. If the problem is corrected, the protection systems deactivate automatically, this indicator goes out, and normal amplifier operation is resumed.

3. CLIP INDICATORS

CLIP indicator on each channel illuminates when distortion reaches or exceeds approximately 0.5%, indicating that the amplifier is being driven by excessively high inputs.

4. SIGNAL INDICATORS

These green LED indicators light up when the channel's output signal exceeds 2Vrms (=1/2 watt into 8 ohm or 1 watt into 4 ohm).

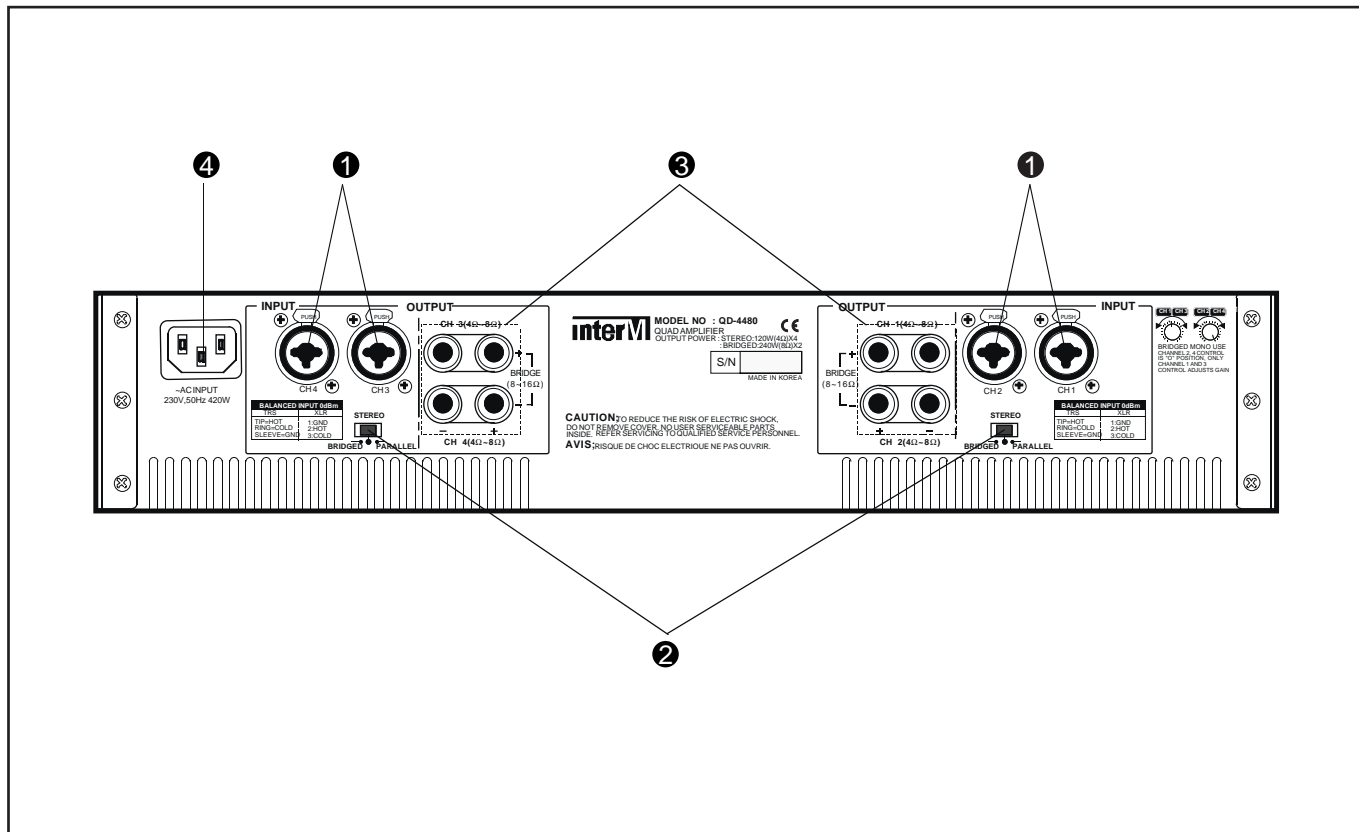
5. INPUT ATTENUATORS

These are 21-step detented input signal attenuators. Attenuation range is from ∞ to infinity (0).

6. HANDLES

You can handle this amplifier easily by using these handles.

REAR PANEL CONTROLS

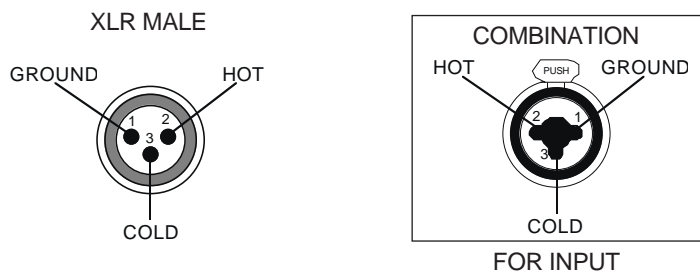


1. INPUT TERMINALS (CHANNEL 1, 2, 3, 4)

Input connectors are provided both balanced combination jacks. Channel 1 input terminal is used in Bridge mode and parallel mode.

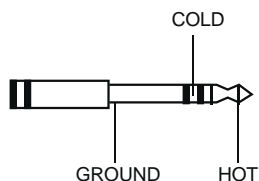
• XLR-TYPE CONNECTOR

They are wired pin 1-ground, pin 2-hot (+), and pin 3 cold (-).



• PHONE JACK

They are wired tip-hot (+), ring-cold (-), and sleeve-ground.



2. MODE SELECTOR

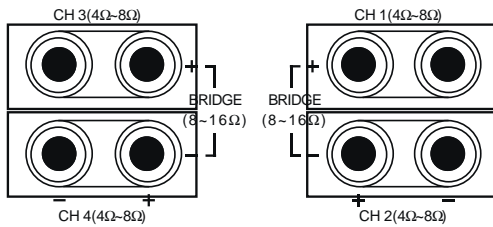
Bridged mono or parallel operation are easily accessed by the slide switch. The input is applied channel one only the corresponding front panel control is used to set the level, please refer bridged mono operation or parallel operation.

3. OUTPUT TERMINALS

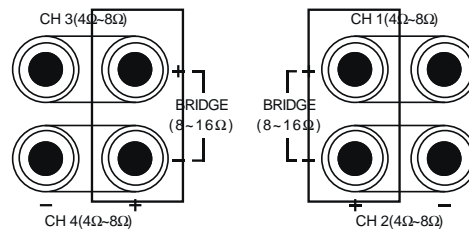
Output terminals are dual five-way binding posts and speaker connectors. Do not parallel the two outputs of each channel by connecting them (together, or parallel them) with any other amplifier output.

* When speakers are connected through speaker, please make sure correct connection of each pin, and refer speaker pin number.

• STEREO MODE



• BRIDGED MODE



4. AC POWER

Plug this AC input cord into AC outlet.

※ FANS (QD-4240/4480)

The fans should be kept free of all obstructions and be accessible to cool fresh air when possible. It is important that the fans be used in a dust free environment.

Fans are located in the Amplifier inside.

STEREO MODE, BRIDGED MODE AND PARALLEL MODE

• STEREO MODE

In this mode, each channels operate independently (typical quad amplifier). Channel 1 input signal feeds channel 1 power amp, and channel 2 input signal feeds channel 2 power amp (channel 3 and 4 are operate same as channel 1 and 2). In this mode, the minimum speaker impedance per channel is 4Ω.

• BRIDGED MODE

In this mode, channels 1, 2 or 3, 4 are bridged together and work as one mono amplifier. In this mode, the minimum speaker impedance is 8Ω. (Caution: In this mode, channel 2 and 4 volume is set maximum position (0)).

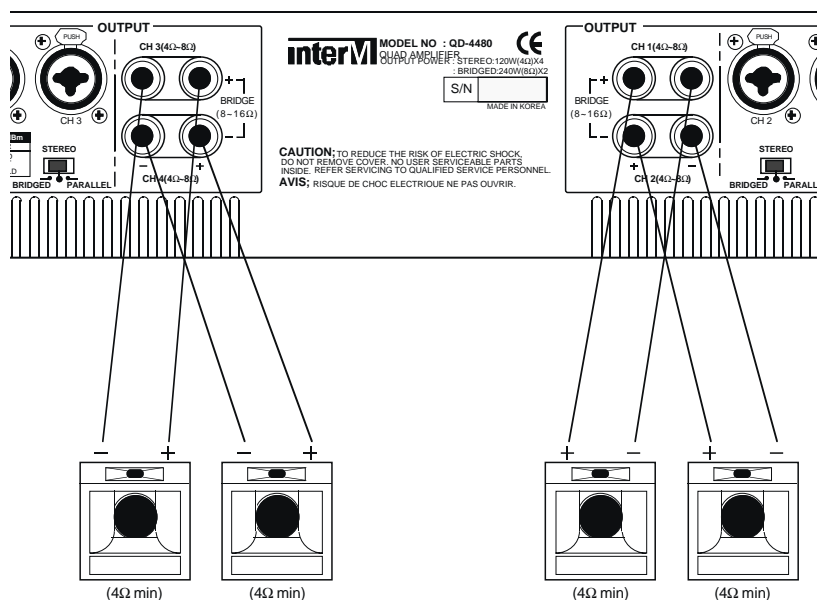
• PARALLEL MODE

In this mode, channels 1 and 2 are operate two mono amplifier. In this mode channel 1 input signal feeds channel 1 and channel 2 power amp, the minimum speaker impedance per channel is 4Ω. Also, channel 3 and 4 are operate same as channel 1 and 2.

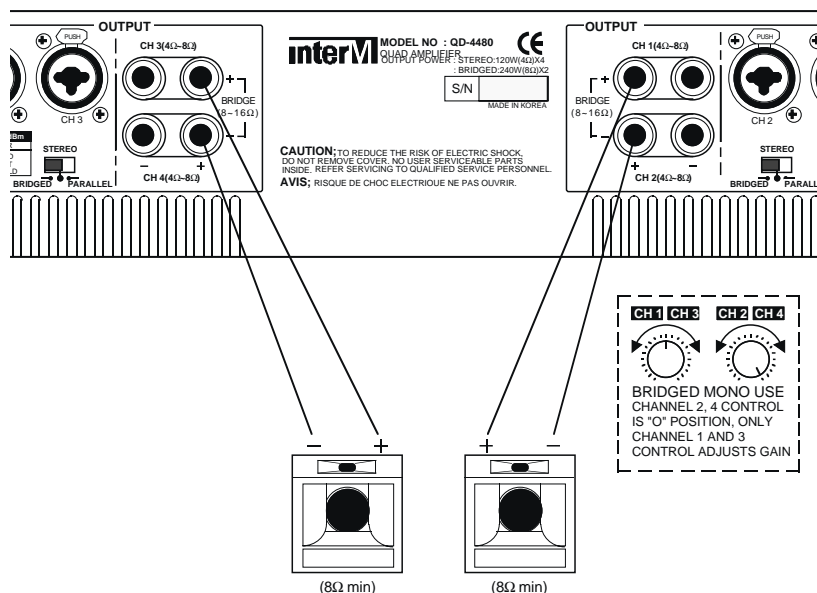
SPEAKER IMPEDANCE

QD-4240/QD-4480 series amplifier has three operating modes: Stereo, Bridged and Parallel and allows you to connect multiple speaker systems in parallel. Therefore, the minimum speaker impedance varies depending on the combination of these speakers. Be sure that the speaker impedance falls below the specified impedance. The figures below show the examples of connection in Stereo mode and Bridged mode, and speaker systems connected in parallel in Stereo mode, and the respective minimum impedance.

STEREO MODE CONNECTIONS

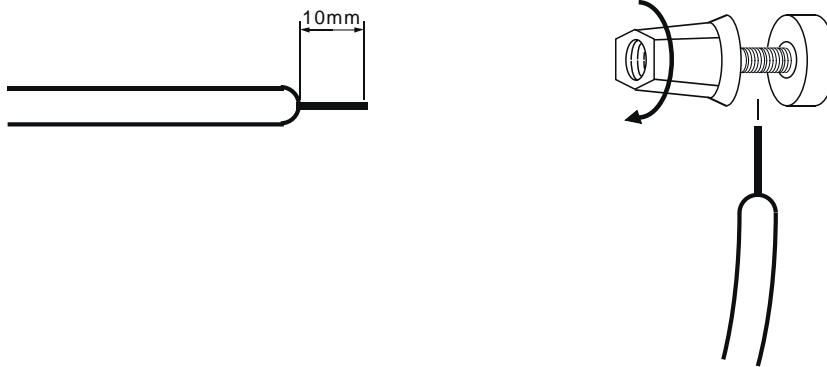


BRIDGED MODE CONNECTIONS

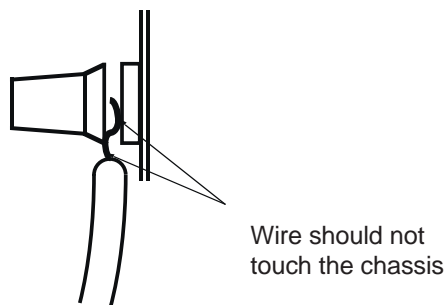


CAUTION FOR SPEAKER CONNECTION

1. Turn off the POWER switch.
2. After removing approx. 10 mm of insulation from the ends of the speaker cables, pass the bare ends of the speaker wires through the holes in the corresponding speaker terminals and tighten the terminals to securely clamp the wires.
Refer to page 4 for speaker polarity.



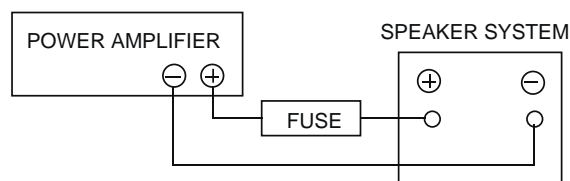
At this time make sure that the bare ends of the speaker cables do not extend from the terminals in such a way that they touch the chassis.



• SPEAKER FUSE

The output capacity of this amplifier is high: 120W ×4CH (4Ω) in stereo and 240W ×2CH (8Ω) in monaural on the QD-4480: 60W ×4CH (4Ω) in stereo and 120W ×2CH (8Ω) in monaural on the QD-4240. Be sure to use a speaker system that has sufficient input capacity.

If the input capacity of your speaker system is lower than the rated output of the power amplifier, you can protect your speakers by connecting a fuse serially between the speaker and amplifier as shown below.



Use the following formula to determine the fuse capacity according to the speaker's input capacity.

$$P_0 = I^2 R \rightarrow I = \sqrt{\frac{P_0}{R}}$$

P_0 [W] : Speaker's continuous input capacity (noise or RMS)

R [Ω] : Speaker's nominal impedance

I [A] : Required fuse capacity

ex.) Speaker's continuous input capacity: 100W

Speaker's impedance: 8 Ω

$$I = \sqrt{\frac{100}{8}} 3.5$$

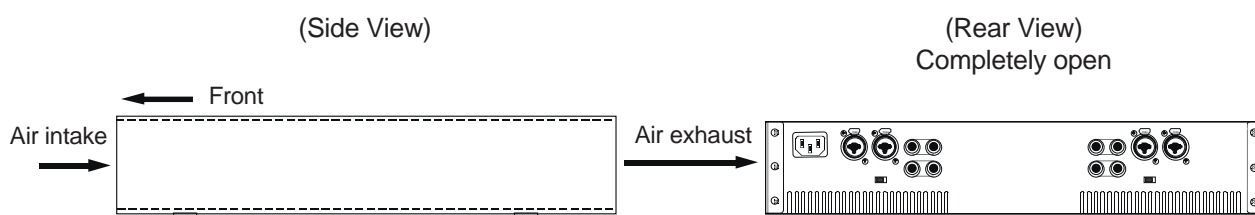
In this example, the required fuse capacity is calculated as 3.5 [A].

• SPEAKER CABLE

If you use a long speaker cable, use as thick a cable as possible to prevent deterioration of the damping factor or power loss inside the cable. Even the thickest cable can be used for the speaker terminal of this unit.

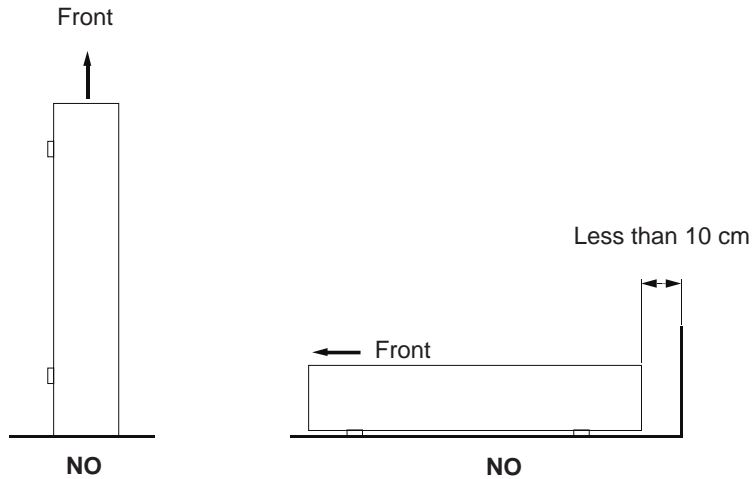
PORTABLE RACK MOUNTING

The amplifier intakes cool air through the front panel and exhausts warm air out the rear panel. When mounting amplifiers in a portable rack, make sure the rear panel is completely open for ventilation.



POSITIONING THE HOUSED AMPLIFIER

Place the case so that the ventilation airflow paths are not blocked.



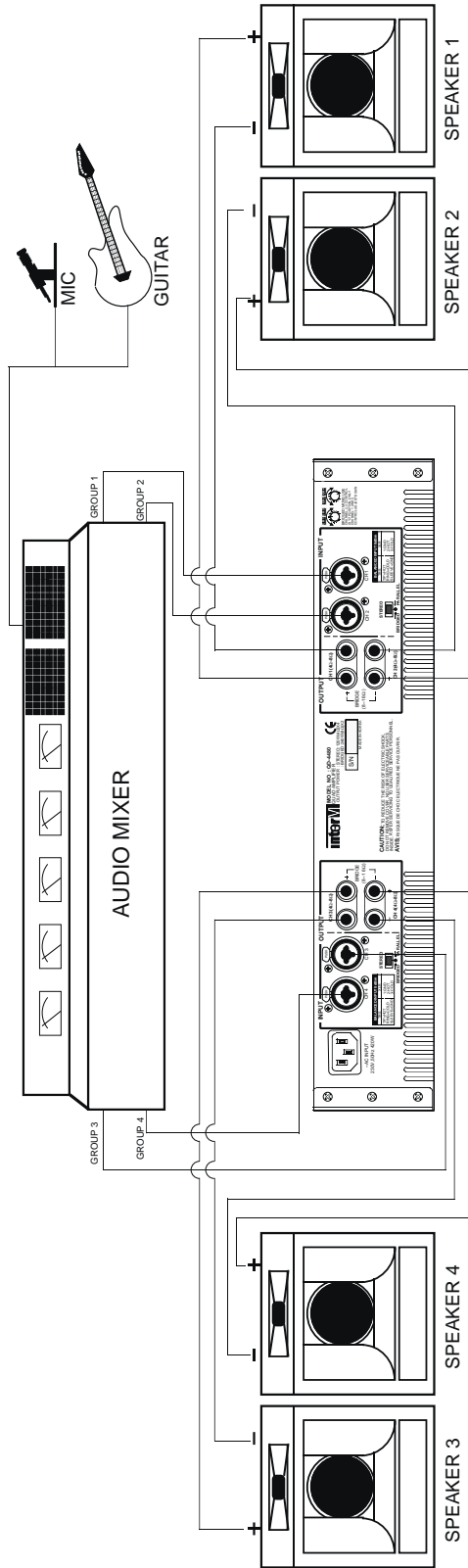
TROUBLESHOOTING

The following table lists the main causes of abnormal operation and the corrective measures required, as well as the protective circuit operation in each case.

| Indicator | Probable Cause | Remedy | Protection Circuit |
|------------------------------|---|---|---|
| CLIP indicator lights. | There is a short at a speaker terminal, amplifier terminal, or wire. | Locate and correct the cause of the short. | The PC limiter circuit operates to protect the power transistors. |
| | The amplifier load is excessive. | Use a speaker system with an impedance of at least 4Ω (stereo) or 8Ω (bridge). | Same as above. |
| PROTECTION indicator lights. | The heat sink temperature has exceeded 100°C. | Check the amplifier ventilation conditions and take appropriate measures to improve airflow around the amplifier. | The thermal protection circuit operates to protect the power transistors. |
| | DC voltage of +/-2V or greater was generated in the power amplifier's output circuit. | Consult your dealer. | The relay operates to protect the speaker system. |

CONNECTIONS

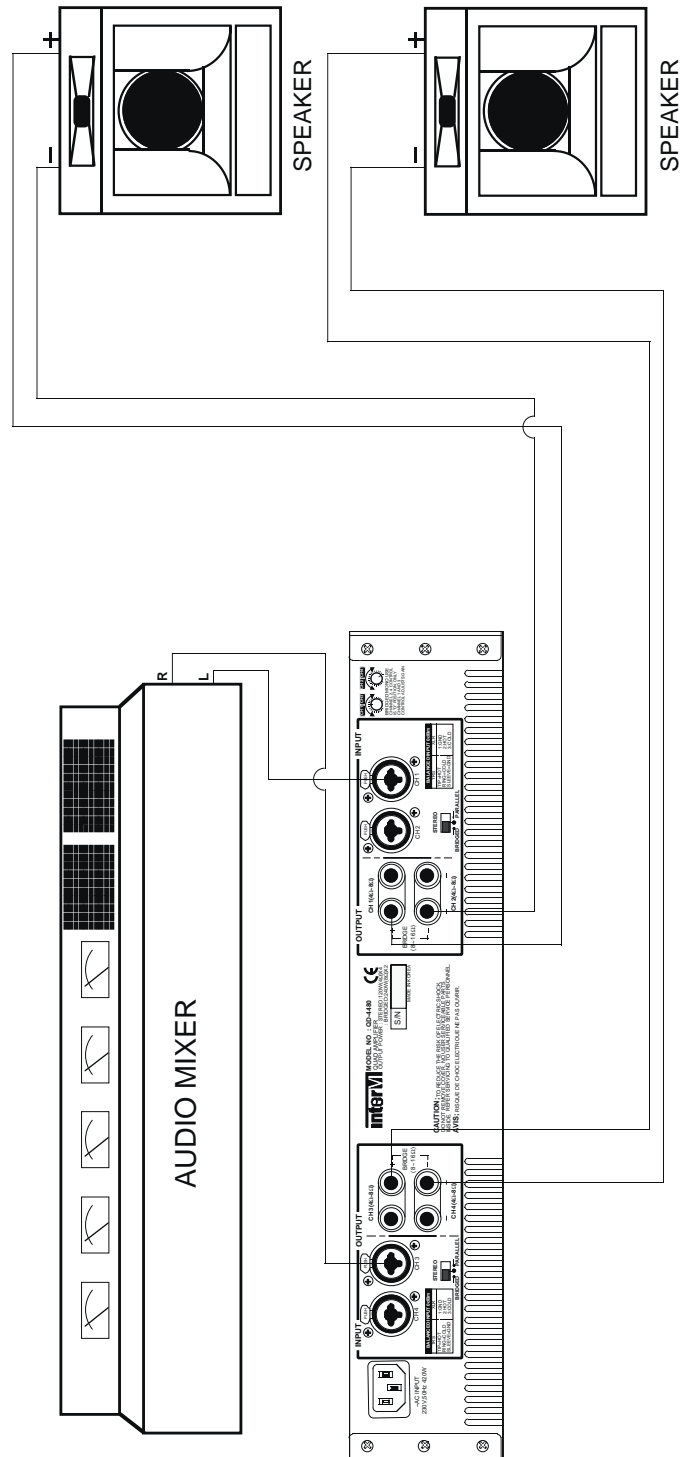
■ SINGLE AMP SYSTEM



CONNECTIONS

■ BRIDGED MONO OPERATION

1. Set mode selector to bridged mono.
2. Set the Channel 2 and 4 VR to maximum (0) position.
3. Connect a mono input signal to channel one input jack.
4. Connect the speaker load to the two red terminals of each channel, please confirm the (+) terminal of speaker to channel one and the (-) terminal to channel two.
5. Do not use the black terminals of each channel.
6. Please notice to connect the speaker impedance 8ohm or above.



SPECIFICATIONS

| | QD-4240 | QD-4480 |
|--|---|---------------------------------|
| Power Output Level f=1KHz, THD+N≤0.05% (Typical) QUAD RL=8Ω RL=4Ω BRIDGED STEREO RL=8Ω One Channel Driven f=1KHz THD+N≤0.05% RL=4Ω | 40W 60W 120W 60W | 80W 120W 240W 120W |
| Frequency Response RL=8Ω, P.=1W | 0dB+0.5, -1.5dB: f=DC~55KHz | |
| Power Bandwidth Half Power, THD+N≤0.1% STEREO RL=8Ω | 10Hz~70KHz | |
| Total Harmonic Distortion (THD+N) f=20Hz~20KHz, Half Power STEREO RL=8Ω RL=4Ω BRIDGED RL=8Ω | ≤ 0.05% ≤ 0.07% ≤ 0.07% | |
| Channel Separation Half Power RL=8Ω, f=1KHz, ATT. max. Input 600Ω shunt | ≥ 80dB | |
| Residual Noise (DIN Audio Filter) | ≤ -70dB: ATT min. | |
| Signal-to-Noise Ratio DIN Audio, Input 600Ω Shunt | ≥100dB | |
| Sensitivity (ATT max.) Rated Power into 4Ω 1KHz | 0dBm | |
| Input Impedance (ATT max.) | ≥ 20KΩ (Balance/Unbalance) | |
| Indicators | Power (Red) Protection (Mute) x 4 (Red) Clip x 4 (Red) Signal x 4 (Green) | |
| Protection | Power SW ON/OFF muting Heatsink Temp ≥ 100°C (212°F) | |
| PC Limiter | RL < 2Ω | |
| Fan Circuit | -50°C (122°F)–60°C (140°F)– Low-Speed – Variable – Hi-Speed | |
| Controls | (Front) Power SW: Push up On/Push down Off Attenuator: 21-position dB calibrated (Rear) Mode Sw: Bridge=BTL/STEREO/PARALLEL | |
| Power Source | UL & Canadian Model: 120V, 60Hz General Model: 230V, 50Hz British Model: 240V, 50Hz | |
| Power Consumption | 300W | 420W |
| Weight | 11.5kg | 15.5kg |
| Dimensions | 482(W) x 88(H) x 369(D) mm | |
| Connectors | Input : Combination Jack (balanced) Output : 5-Way binding posts x 4 | |

* 0dB=0.775 Vrms, Half Power=1/2 Power Output Level (Rated Power)

* Specifications and design are subject to change without notice for improvement.

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MADE IN KOREA