



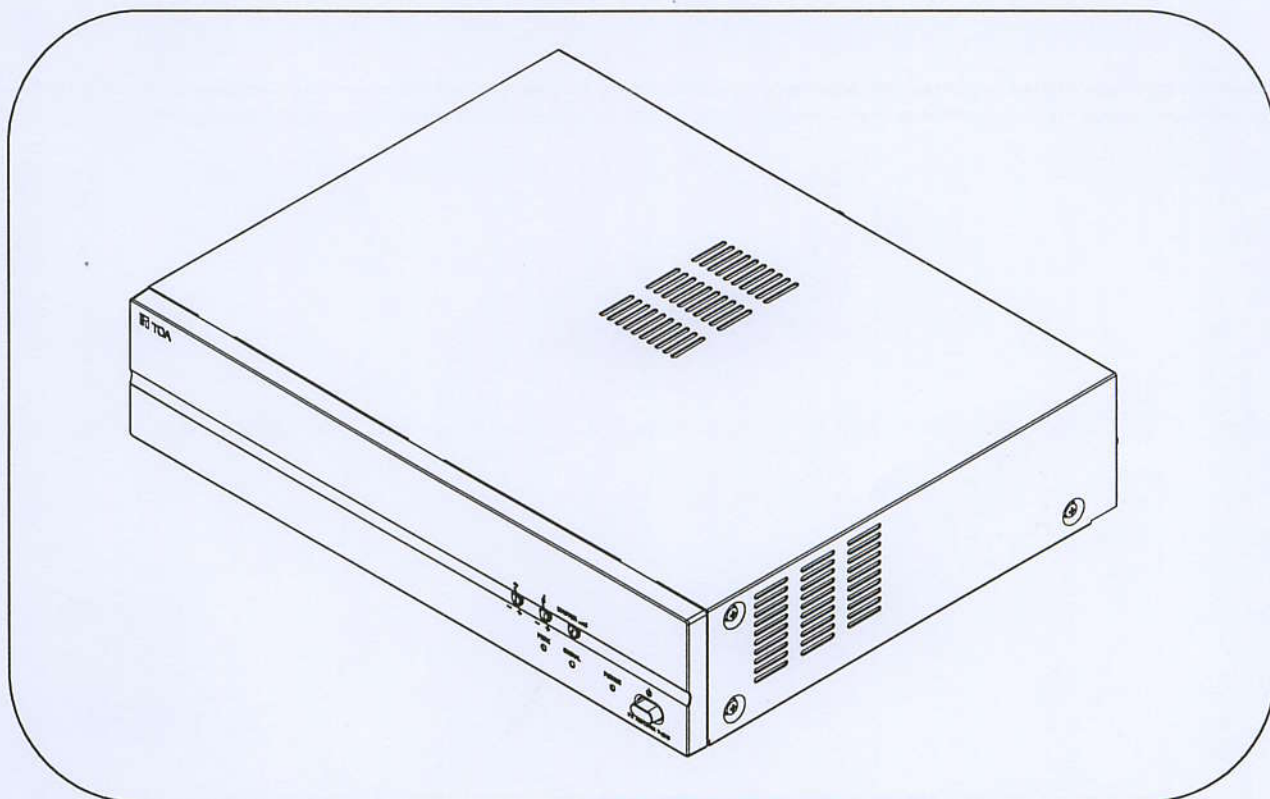
# PA AMPLIFIERS

## OPERATING INSTRUCTIONS

P-2240 L

P-2240 H

Please follow the instructions in this manual to obtain the optimum results from this unit. We also recommend that you keep this manual handy for future reference.



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# TOA Corporation



# 1. SAFETY PRECAUTIONS

- Be sure to read the instructions in this section carefully before use.
- Make sure to observe the instructions in this manual as the conventions of safety symbols and messages regarded as very important precautions are included.
- We also recommend you keep this instruction manual handy for future reference.

## Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first so you are thoroughly aware of the potential safety hazards as well as understand the safety symbols and messages.

### **WARNING**


Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

### **CAUTION**

Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.

### **WARNING**

## When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects --including the unit itself -- on the power cord, as doing so may result in fire or electric shock.
- The terminals marked with the symbol  are hazardous live. The external wiring to these terminals requires installation by an instructed person.
- The socket-outlet shall be installed near the equipment and the plug (disconnecting device) shall be easily accessible.
- Be sure to replace the unit's terminal cover after connection completion. Because the voltage of up to 100V is applied to the high impedance speaker terminals, never touch these terminals to avoid electric shock.
- Be sure to ground to the safety ground (earth) terminal to avoid electric shock. Never ground to a gas pipe as a catastrophic disaster may result.

## When the Unit is in Use

- Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
  - If you detect smoke or a strange smell coming from the unit.
  - If water or any metallic object gets into the unit.
  - If the unit falls, or the unit case breaks.
  - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest TOA dealer.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.
- Do not insert nor drop metallic object or flammable materials in the ventilation slots of the unit's cover, as this may result in fire or electric shock.

### **CAUTION**

## When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug, never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.
- Do not block the upper panel ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.

## When the Unit is in Use

- Do not place heavy objects on the unit as this may cause it to fall or break which may result in personal injury and/or property damage. In addition, the object itself may fall off and cause injury and/or damage.



## 2. GENERAL DESCRIPTION

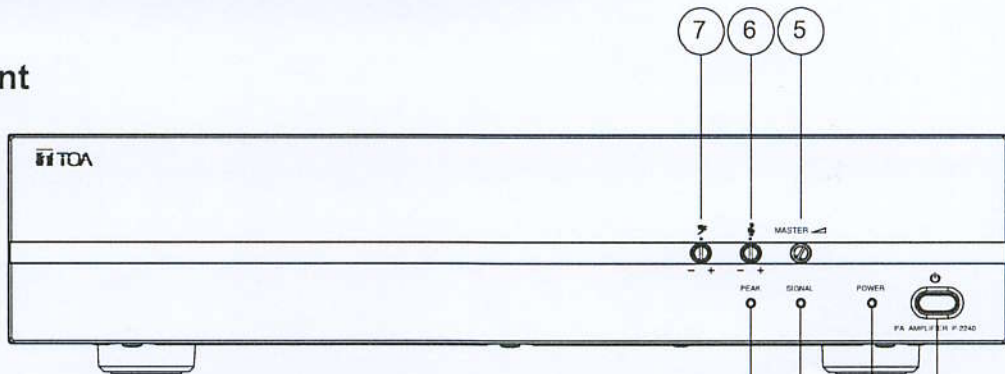
TOA's Basic Power Amplifiers P-2240 is high cost-performance power amplifiers suited for broadcasting paging or background music in schools, offices, shops, factories, mosques, churches and large rooms.

## 3. FEATURES

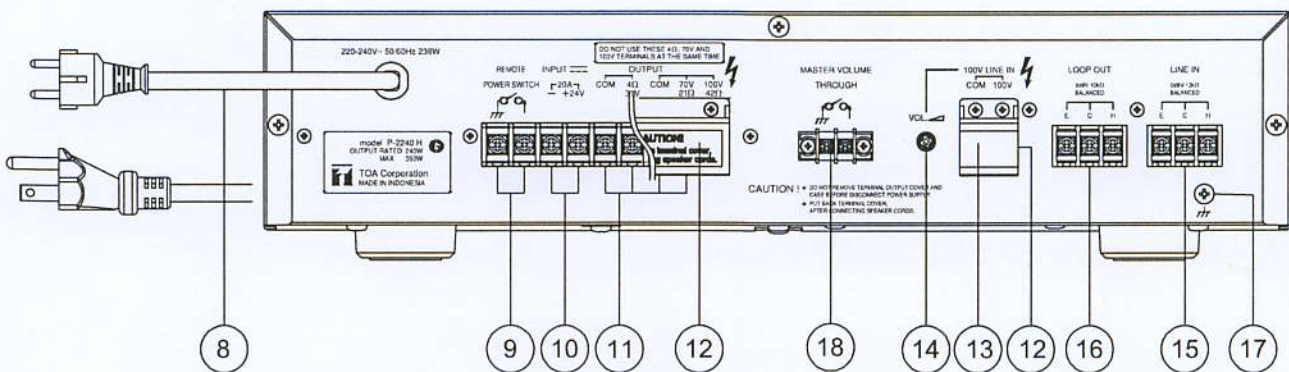
- High durability, high reliability, and high cost performance.
- Two balanced parallel inputs, one speaker line input.
- Speaker output of constant voltage distribution system (70V or 100V) and low impedance (4Ω).
- Operates on both AC and DC power.
- Semi fixed master volume control and independent speaker line input volume control.
- Semi fixed and independent tone controls of boost and cut type for both high and low frequencies.
- Power remote switch by make contact input.

## 4. NOMENCLATURES AND FUNCTIONS

### 4.1. Front



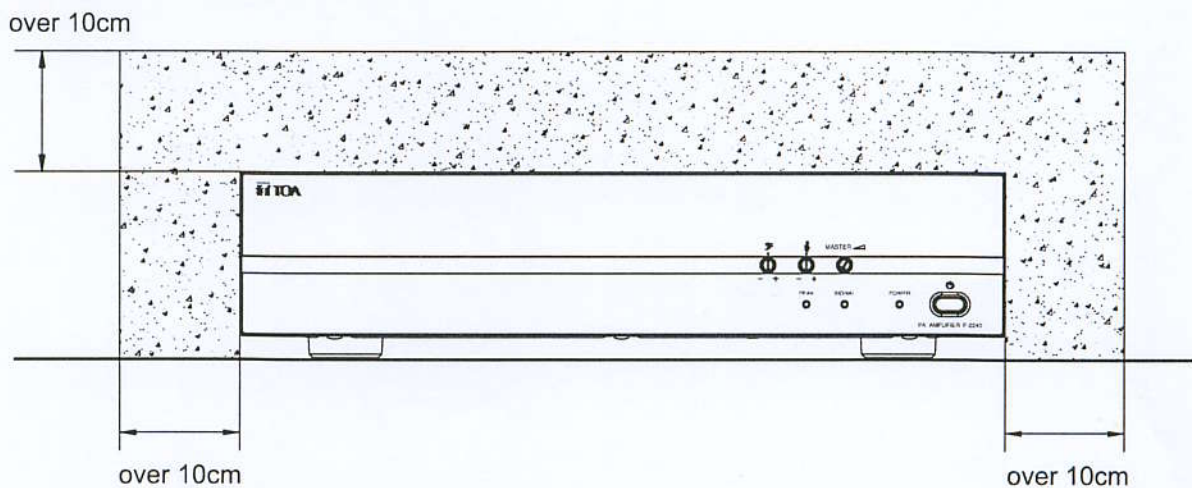
### 4.2. Rear



1. **Power Switch**  
Press to turn ON the power.  
Press again to turn the power OFF.  
Unplug AC Power Cord or disconnect DC Terminal to get complete OFF the power.
2. **Power Indicator**  
Lights green when power is switched ON.
3. **Signal Indicator**  
Lights green when power is switched ON, and indicates an output signal.
4. **Peak Indicator**  
Lights red to indicate the output signal reaches the peak level, this indicates that sound is distorted. In such a case, adjust the master volume control to reduce output level.
5. **Master Volume Control**  
Adjusts the overall signal level.
6. **Treble Control**  
Adjusts treble response. Rotate clockwise to increase treble output, and counterclockwise to reduce it. The center position provides flat characteristics.
7. **Bass Control**  
Adjusts bass response. Rotate clockwise to increase bass output, and counterclockwise to reduce it. The center position provides flat characteristics.
8. **AC Power Cord**  
Connects to an AC power source.
9. **Power Remote Switch**  
Connects to external switch. With the unit's power switched OFF, shorting the Power Remote terminals can remotely turn it. With ON, the power cannot be remotely controlled.
10. **DC Terminal**  
Connects to a DC power supply of 24V.
11. **Output Terminals**  
Connect to speakers. When connecting speakers, use only one of the speaker output terminals, low or high impedance.
12. **Terminal Cover**  
To avoid electric shocks by high voltage from output/input terminal, put back the terminal cover after connecting cords.
13. **Speaker Line Input**  
40dB, 10k $\Omega$ , unbalanced. Connects to 100V line speaker output.
14. **Speaker Line In Volume Control**  
Adjusts the signal level.
15. **Line Input**  
0dB, 10k $\Omega$ , transformer balanced. Connects to Line Out/Rec Out of Mixer Amplifier or Loop Out of other P-2240 Power Amplifier.
16. **Loop Output**  
0dB, 10k $\Omega$ , transformer balanced. Parallel connection with Line Input. Connects to Line In of other P-2240 Power Amplifier.
17. **Ground Terminal**  
Connect to ground (earth) avoid electric shock.
18. **Master Volume Through Terminal (only H version)**  
Connect to remote switch for emergency when master volume minimum position signal through.

## 5. INSTALLATION

Keep the unit's all sides over 10 cm (3.94 inches) away from object that may obstruct air flow to prevent the unit's internal temperature rise.





## 6. CONNECTIONS

### 6.1. Input Connections

- **Connection with the mixer preamplifier having the balanced type output.**

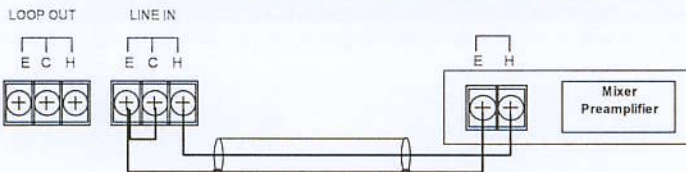
Because it is hard to be affected by the external noise, the connections of the balanced type please adopt this connection manner as much as possible.

And also it recommends this connection when distance of the mixer preamplifier is separated from this power amplifier more than 10m or, in the location where there is a lot of electric noise.



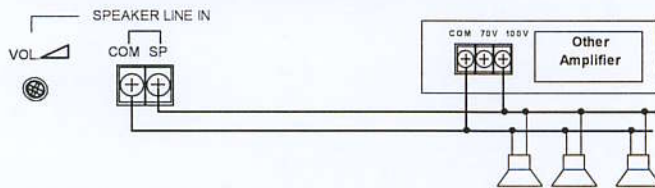
- **Connection with the mixer preamplifier having the unbalanced type output.**

Please make the length of the cable less than several meters.

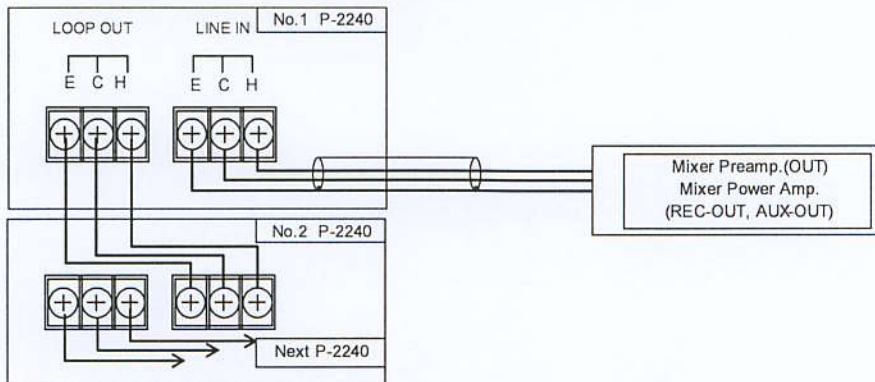


- **Speaker Line Input Connection**

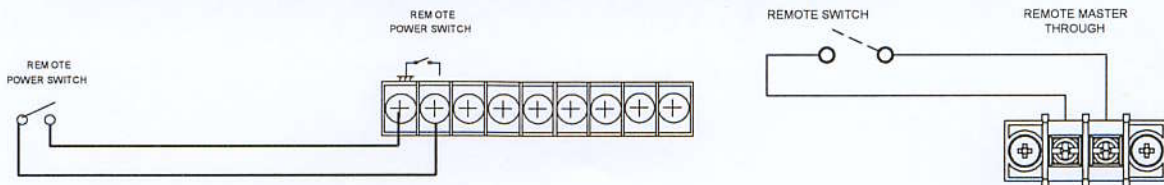
It is connected to the High Impedance (70V /100V) speaker wiring of other amplifier.



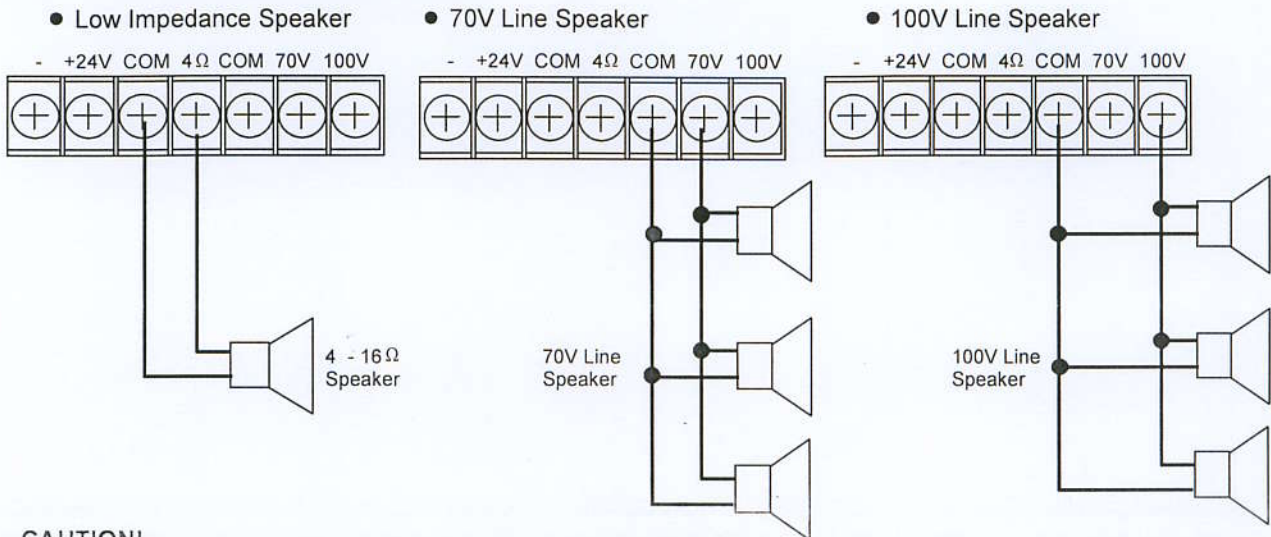
- **Parallel connection of the input.**



- **Remote Power Switch Connection and Master Through Connection (only H version)**



## 6.2. Output Connections



### CAUTION!

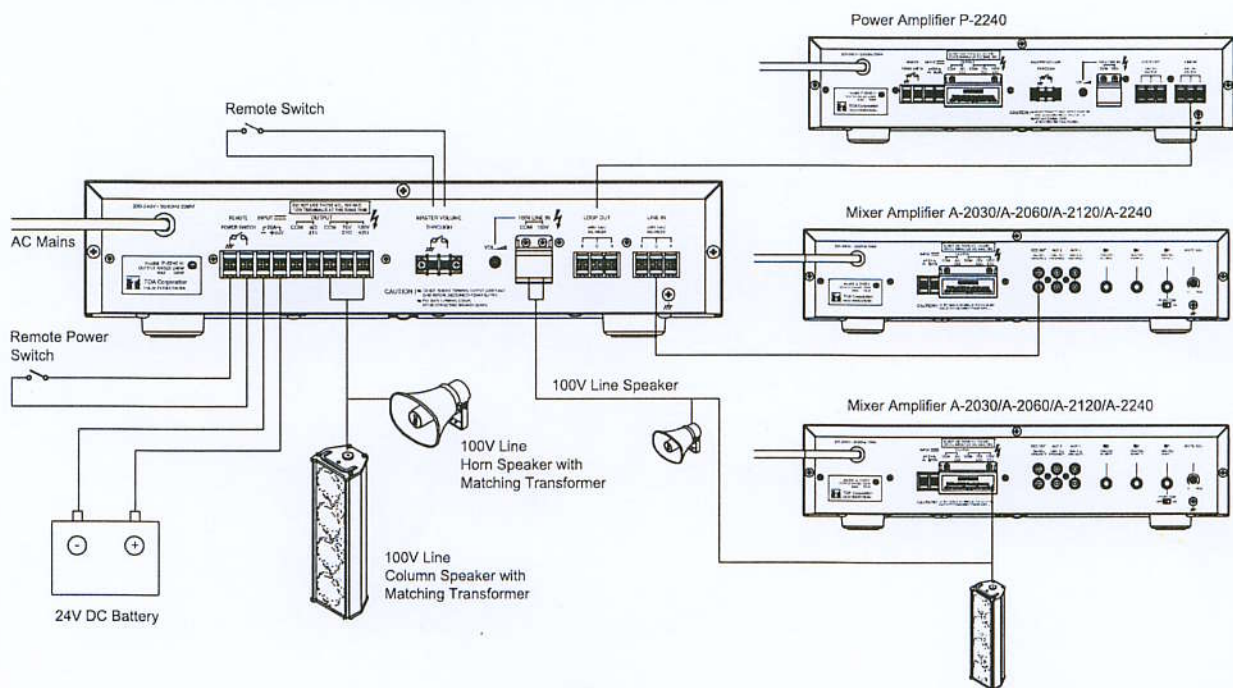
- Tripartite the 4Ω, 70V and 100V terminals cannot be used at the same time.
- Impedances indicated at the terminal represent the total speaker system (load) impedances.
  - Total impedances of 100V line:
    - 42Ω
  - Total impedances of 70V line:
    - 21Ω



### CAUTION

Be sure to attach the supplied terminal cover after connection completion. Because high voltage is applied to the speaker terminals, never touch these terminals to avoid electric shock.

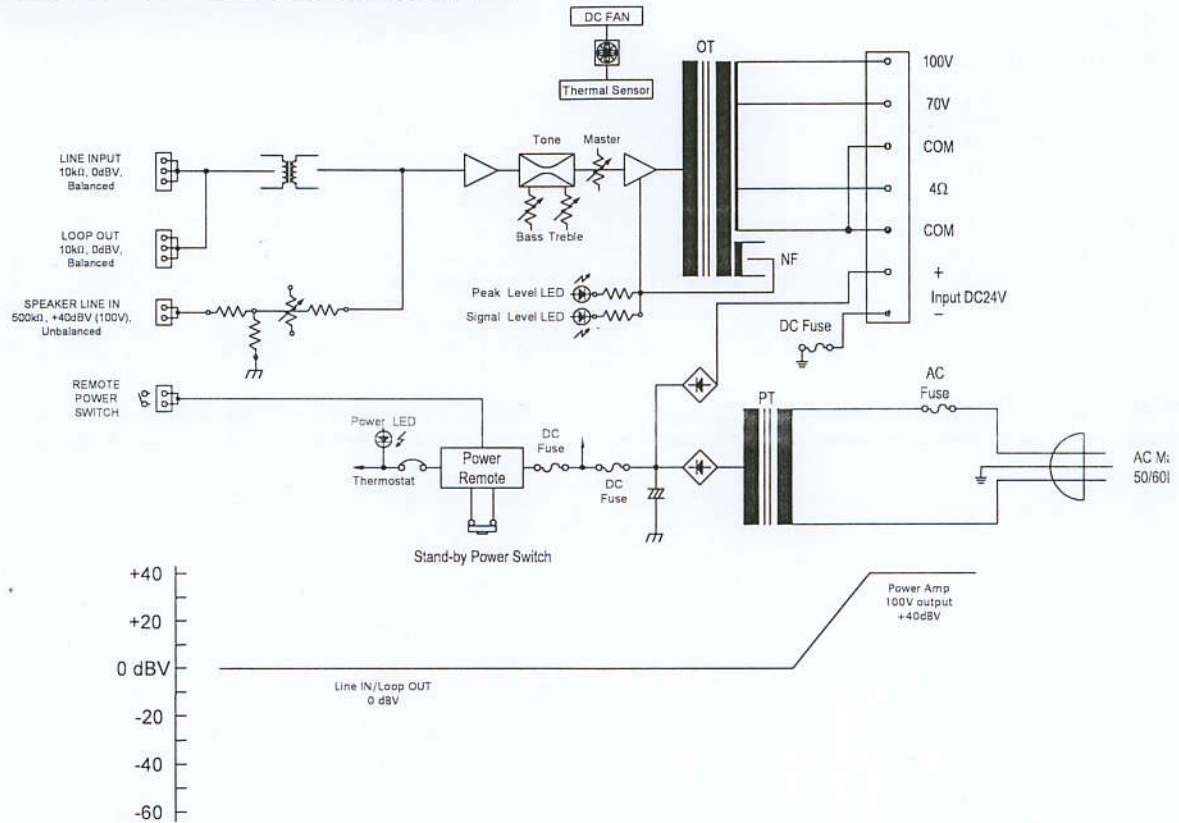
## 6.3. Example of External Equipment Connections



## 7. VOLUME CONTROL SETTINGS

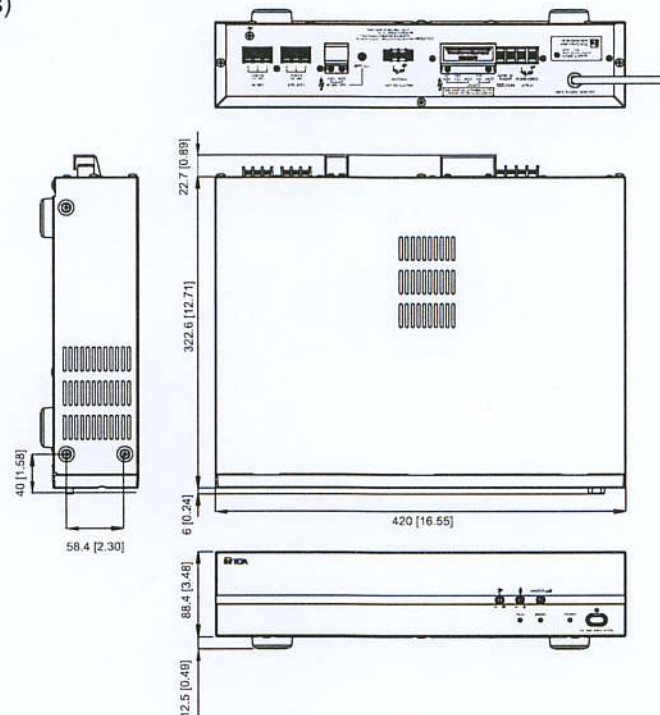
Output levels are adjustable with individual volume controls. For music play or announcement, adjust the corresponding volume control so that the red peak indicator lights intermittently. Note that the sound quality is downgraded when the peak indicator remains lit.

## 8. BLOCK & LEVEL DIAGRAM



## 9. DIMENSIONAL DIAGRAM

units: mm(inches)





## 10. SPECIFICATIONS

Model No.		P-2240 L	P-2240 H
Power Source		110 - 120 V AC or 24 V DC	220 - 240 V AC or 24 V DC
Rated Output		240 W	
Power Consumption (IEC60065)		238 W	
DC Current Consumption (at rated output)		15 A	
Frequency Response		50 - 20,000 Hz, $\pm 3$ dB	
Distortion		Less Than 1% at 1kHz, 1/3 Rated Power	
Inputs	Line In/Loop Out	0 dBV (1V), 10 k $\Omega$ , Balanced, Screw Terminal	
	Speaker Line In	40 dBV (100 V), 330 k $\Omega$ , Unbalanced, Screw Terminal	
Outputs	Speaker Out	All Speaker Outputs are Floating Balanced	
	100V	42 $\Omega$	
	70 V	21 $\Omega$	
	4 $\Omega$	31 V	
S/N Ratio		Over 60 dB	
Tone Controls		Bass: $\pm 10$ dB at 100 Hz Treble: $\pm 10$ dB at 10 kHz	
Controls	Front Panel	1-Master VR, 1-Bass Tone VR, 1-Treble Tone VR (semi-fixed type) 1-Power Switch	
	Rear Panel	1-Speaker Line In VR (semi-fixed type), 1-Remote Power Control Terminal 1-Remote Master Through Control Terminal (only H version)	
Indicators		Power LED, Signal LED, Peak LED	
Ventilation		Fan Cooling	
Finish		Panel: ABS Resin, Black Case: Steel Plate, Black	
Dimensions		420(W) x 101(H) x 360(D) mm 16.54(W) x 3.98(H) x 11.02(D) inches	
Weight		13.2 kg 29.10 lb	
<b>H and L are the identically same specifications, but only power supply cord, AC power source and master through facility is different.</b>			

\*) 0dBV = 1.0V

\*\*) Specifications are measured on 240V AC for H version and 120V for L version.

**Note:** The design and specifications are subject to change without notice for improvement.