

User's manual

SPA-60



Public address system

SPA-120



- Fashion design
- Versatile Functions
- High Stability
- User-friendly operation

WARNING

TO PREVENT FIRE OR SHOCK HAZARD. DO NOT USE THIS PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.
TO PREVENT FIRE OR SHOCK HAZARD. DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
TO PREVENT ELECTRIC SHOCK. MATCH WIDE BLADE PLUG TO WIDE SLOT FULLY INSERT.



This lightning flash with arrow Head symbol within an equilateral triangle, 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



Warning: to reduce the risk of Electric shock, do not remove Cover (or back) no user-Serviceable parts inside. refer Servicing to qualified service Personnel



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important Operating and maintenance (servicing) instructions in the literature accompanying the appliance

IMPORTANT SAFETY INSTRUCTION

1. Read these instructions
2. Keep these instructions
3. Heed all warnings
4. Follow all instructions
5. Do not use this apparatus near water
6. Clean only with dry cloth
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat
9. Do not defeat the safety purpose of the polarized or grounding type plug. Polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet
10. Test the power cord from being walked on or pinched particularly at the plugs convenience receptacles and at the point where they exit from the apparatus
11. Only use attachments/accessories specified by the manufacturer
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus, when a cart is used, be cautious when moving the cart apparatus combination to avoid injury from tip over



13. Unplug the apparatus during lightning sort or when unused for long periods of time
14. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in anyway such as power supply cord or plug is damaged liquid has been spilled or objects have fallen into the apparatus has been exposed to rain or moisture does not operate normally or has been dropped
15. This appliance shall not be exposed to dripping or splashing water and that no object filled with liquid such as vases shall be placed on the apparatus
16. Use caution to prevent electric shock, match wide blade plug to wide slot, fully inserted
17. Please keep a good ventilation environment around the entire unit

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Introduction



SPA-60/SPA-120

Welcome

Congratulation and thank you for purchasing the M series, a multi-function commercial amplifier. These amplifiers are designed to provide a big impact in sound reproduction and to produce the best and highest quality audio at an affordable price. We wish you great enjoyment and satisfaction when using your amplifier, whether you are an installation, or reinforcement engineer.

Unpacking and Installation

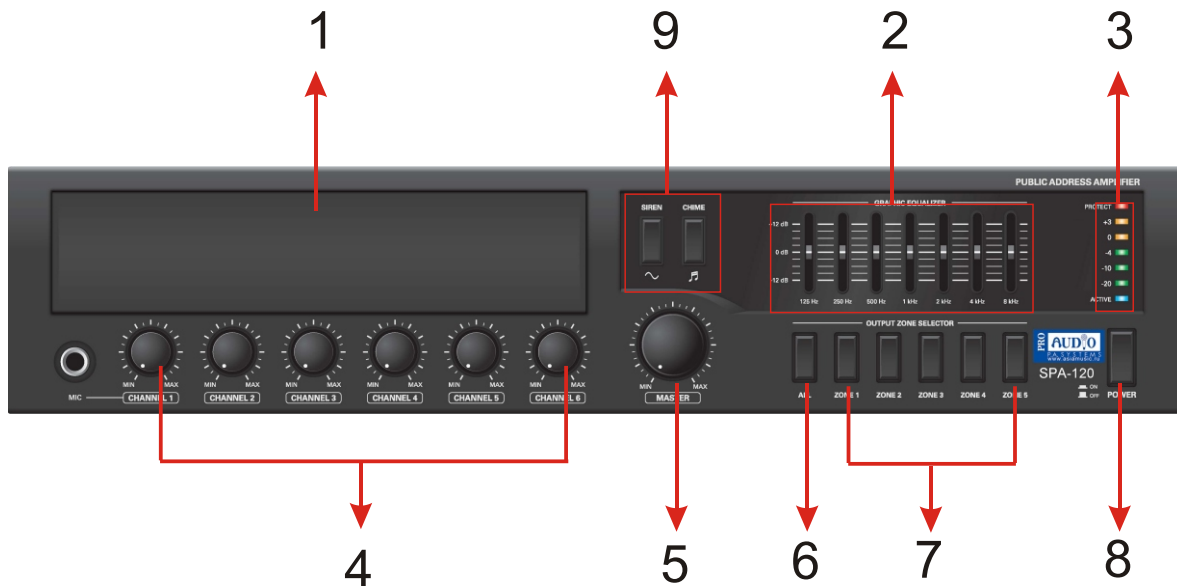
Although it is neither complicated to install nor difficult to operate your amplifier, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its features and how to use them. Please take a great care may be needed when moving your set and are required if it ever becomes necessary to return your set for service. Never place the unit near radiator, in front of heating vents, to direct sun light, in excessive humid or dusty location to avoid damages and to guaranty a long reliable use. Connect your unit with the system components according to the description on the following pages.

Features

The SPA-60 and SPA-120 are comprehensive, all-in-one mixer-amplifier solutions for commercial and industrial applications. These low-cost units provide all necessary features in a simple building-block format.

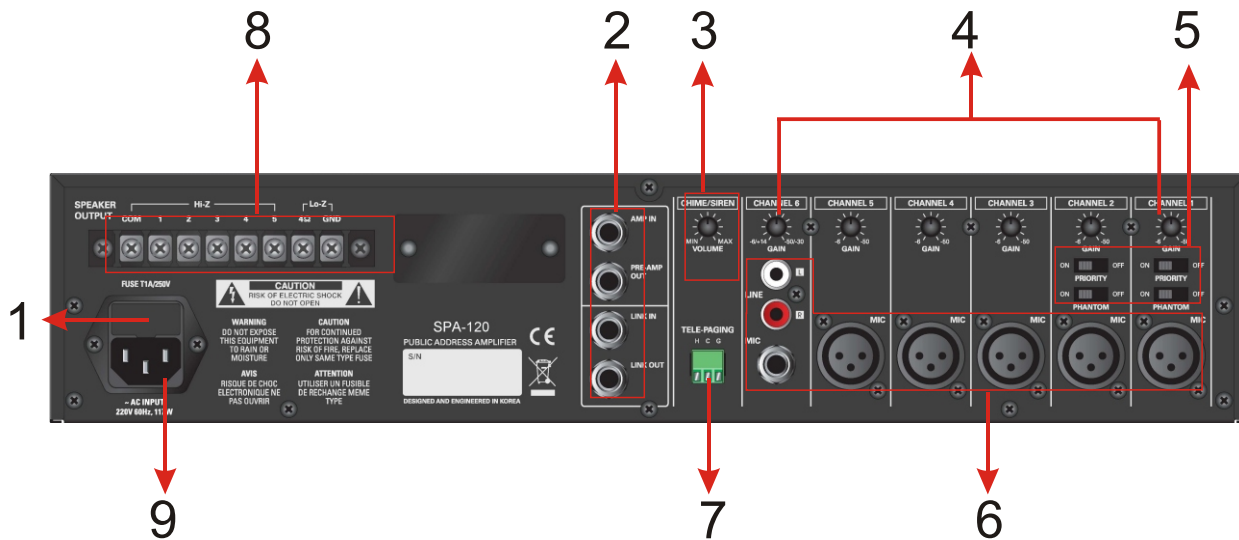
- * Six microphone or line inputs with 1/4-inch phone, XLR and RCA jacks.
- * Acceptable wide range input level.
- * One telephone paging input with EURO block terminal.
- * Phantom power for MIC channel 1 and 2.
- * Three layer priority muting.
- * Built in four kinds user selectable pre-announce chime.
- * 60watts(SPA-60), 120watts(SPA-120) rated power output.
- * Advanced protection system includes current limiting, over current and thermal protection.
- * Desktop and 19-inches rack mountable type.
- * Seven band graphic equalizer.
- * Expendable by adding audio mixer and power amplifier with LINK and PRE-AMP terminal.
- * Low distortion and low noise level.
- * Compact size and lightweight.
- * Ideal for commercial and industrial use.

Front Panel Controls



1. Bay for adding optional music source (CD player with AM/FM Tuner, or MP3 player).
2. Graphic equalizer control (125Hz/250Hz/500Hz/1kHz/2kHz/4kHz/8kHz).
3. Indicators (Protection/Output level/Power).
4. Input channel volume controls.
5. Master volume control.
6. All speaker zone output selector.
7. Individual speaker zone output selector.
8. Power switch
9. Evacuation siren and pre announcement Chime switch

Rear Panel Controls



1. AC fuse.
2. Expansion ports (AMP-IN/AMP-OUT/LINK-IN/LINK-OUT).
3. Pre-announce chime/Siren level control
4. Gain controls for variable input level.
5. Phantom power and priority control switches.
6. Signal input connectors.
7. Telephone paging input connector.
8. Speaker outputs connector (4-ohm, selectable 25V, 70V and 100V).
9. AC power socket

Setup

Installation

CAUTION: Before you begin, make sure your mixer-amplifier is disconnected from the power source, with the power switch in the OFF position and all level controls turned completely down (counterclockwise)

You may stack mixer-amplifiers without using a cabinet or you may place a single mixer-amplifier on a surface with 12-inches (about 30cm) of air space around the unit for convection cooling. When using an equipment rack, do not mount units directly on top of each other. Allow 2U between units for convection cooling. The side walls of the rack should be a minimum of 2-inches (about 5cm) away from the amplifier sides, and the back of the rack should be a minimum of 4-inches (about 10cm) from the mixer-amplifier rear panel.

Installation

1. Locate the two rack ears and six rack-ear screws supplied.
2. Place a rack-ear flush with the right front of the chassis.
3. Insert a screw into the bottom hole of the rack-ear and chassis. Screw it in.
4. Insert a screw into the mid hole of the rack-ear and chassis. Screw it in.
5. Insert a screw into the top hole of the rack-ear and chassis. Screw it in.
6. Repeat steps 2 to 5 for the left side of the chassis.
7. Remove the four legs from bottom of unit.
8. Please refer to Figure .



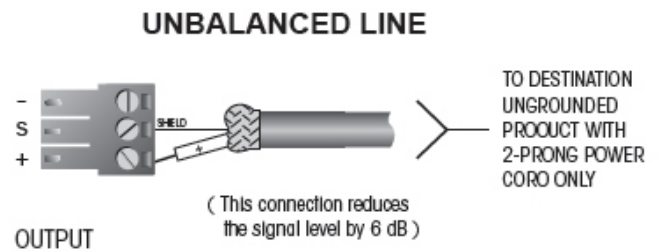
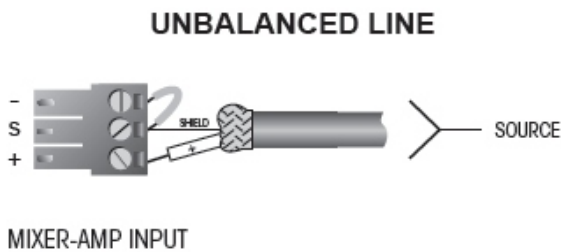
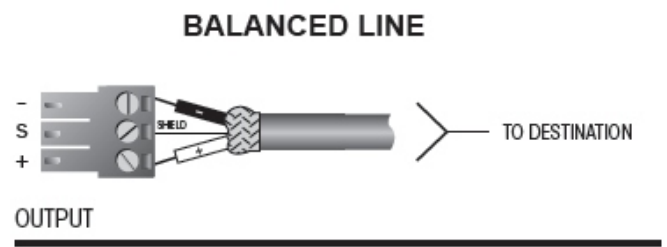
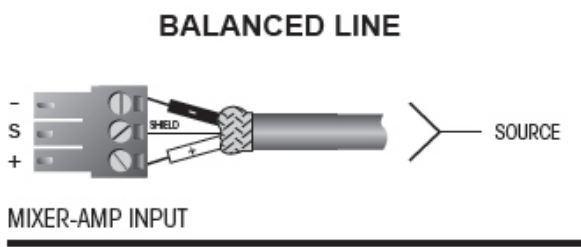
[How to connect rack ears]

Wiring Guide

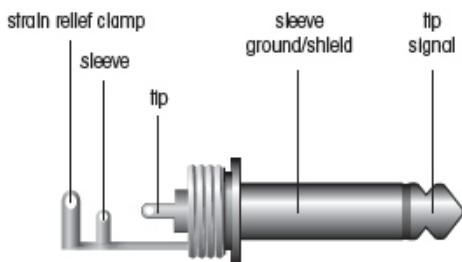
Choose input wire and connectors

TKOKO recommends using pre-built or professionally wired balanced line, 22 to 24 gauge cables.

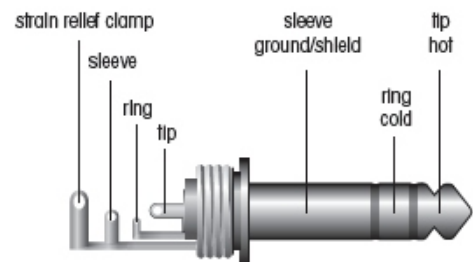
Figure shows connector pin assignments for wiring. The RCA input connections can also be used for unbalanced inputs.



Unbalances 1/4" Connector

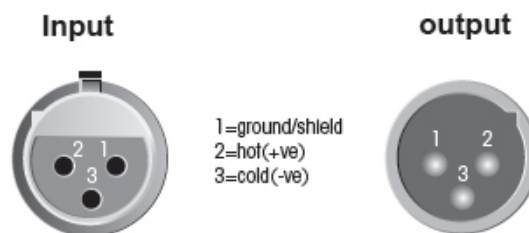


Balances TRS 1/4" Connector



For connection of balanced and unbalanced plugs, ring and sleeve have to be bridged at the stereo plug

XLR Balanced Wiring Guide



For unbalanced use pin 1 and 3 have to be bridged

Choose input wire and connectors

For the amplifier output connectors, TKOKO recommends using pre-built or professionally wired, high-quality, and heavy gauge speaker wires. You may use screw terminal for your output connectors. To prevent the possibility of short-circuits, wrap or otherwise insulate exposed loudspeaker cable connectors.

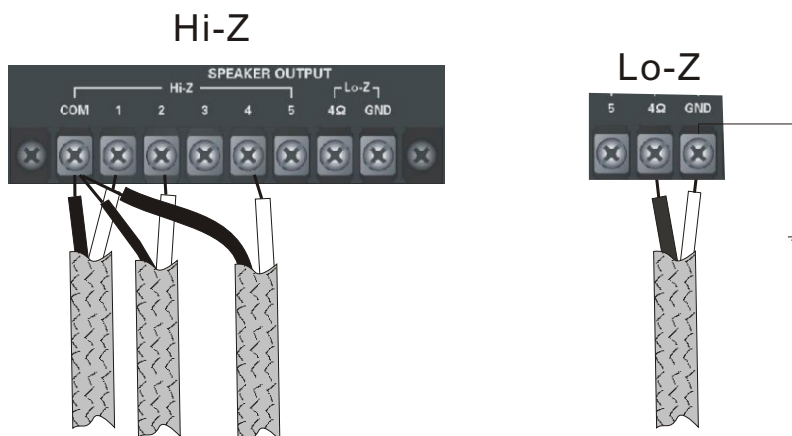
Using the guidelines below, select the appropriate size wire based on the distance from amplifier to speaker. The wire sizes apply to the 4-ohm tap.

| Distance | Wire Size |
|--------------|-----------|
| Up to 25 ft. | 16 AWG |
| 26~40 ft. | 14 AWG |
| 41~60 ft. | 12 AWG |
| 61~100 ft. | 10 AWG |
| 101~150 ft. | 8 AWG |
| 151~200 ft. | 6 AWG |

NOTE: Custom wiring should only be performed by qualified personnel. Class 2 wiring is required.

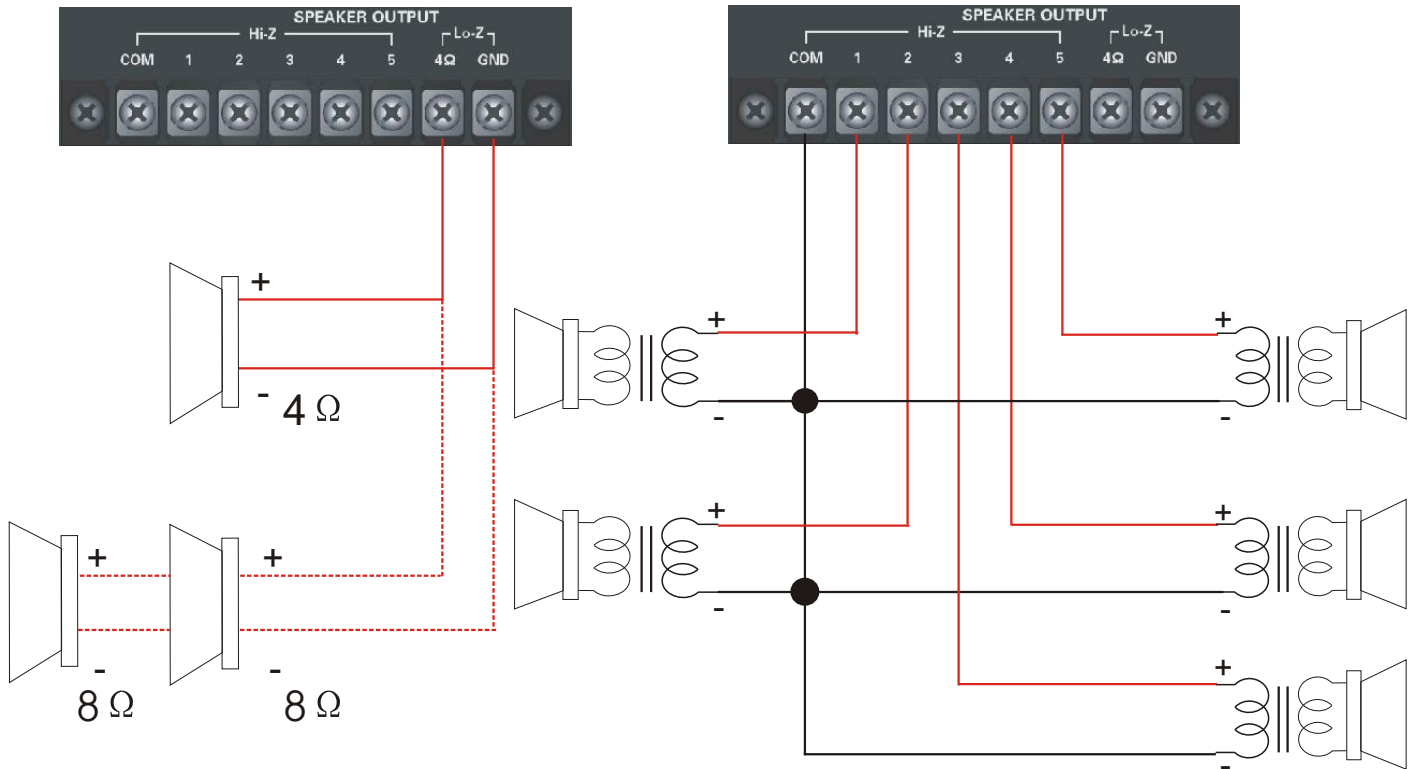
CAUTION: Never use shielded cable for output power wiring

Figure shows connector pin assignments for wiring



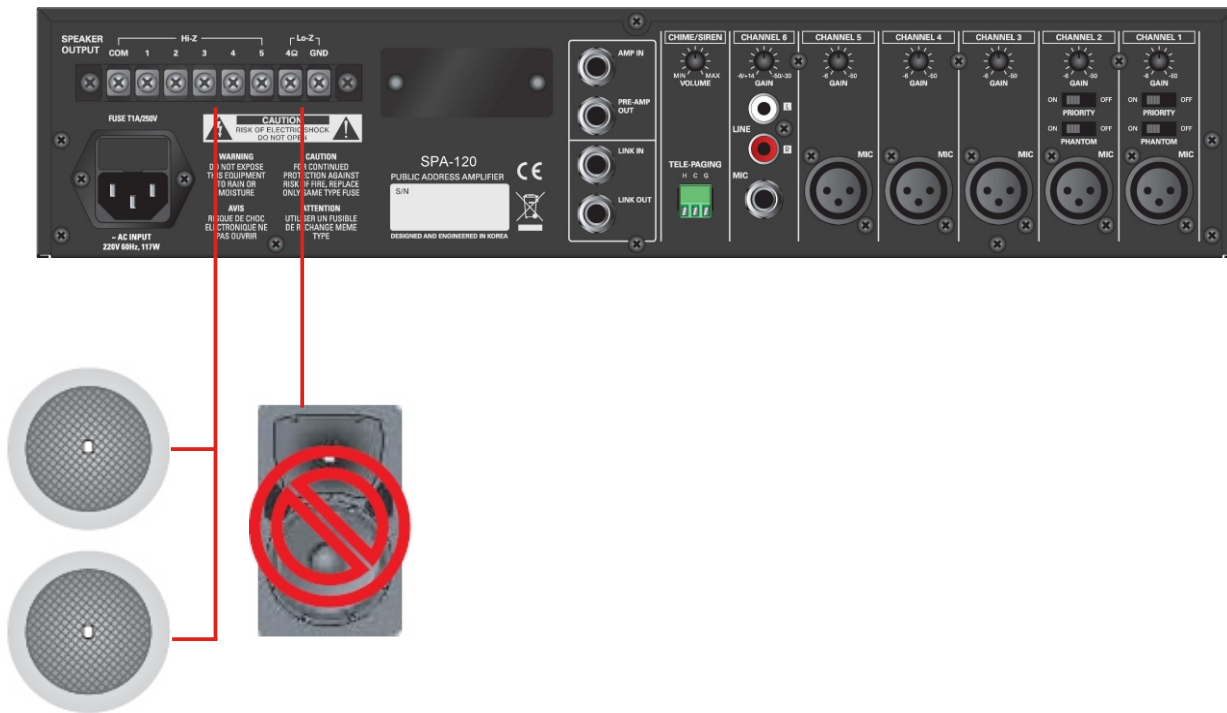
[Connection to speakers illustration]

Speaker connection is shown in Figure.



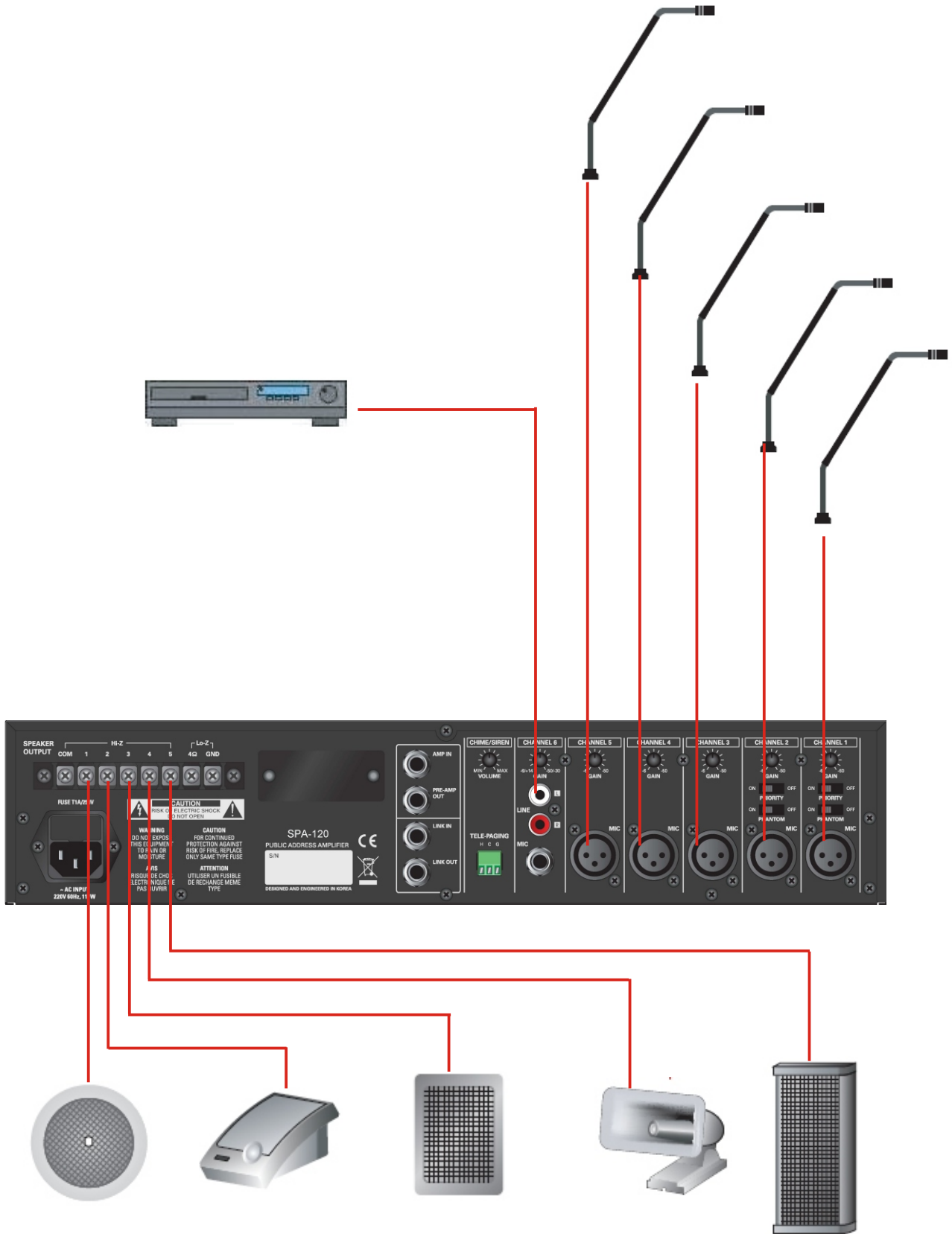
[How to connect speakers]

CAUTION : Never use both the Low-Z(4 ohms)and Hi-Z(25V, 70V and 100V) terminals at the same time



[Wrong connection]

Typical input and output wiring is shown in Figure.



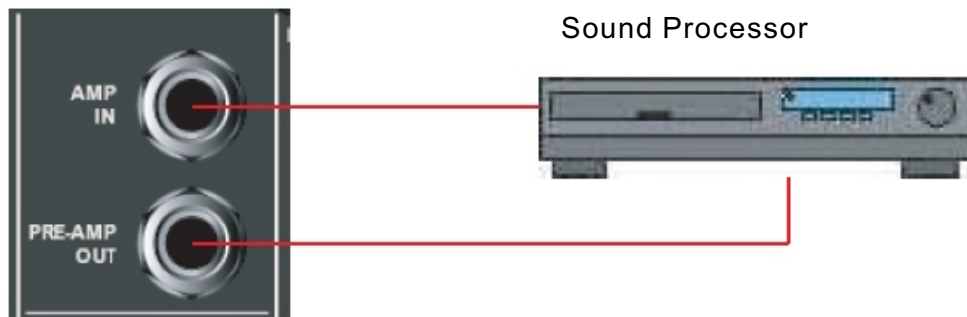
Operations

External equipments connection

By connecting a signal processor such as an equalizer or limiter between the mixer section (PRE-AMP OUT) and the power amplifier section (AMP IN) of the M series, signals can be tailored for desired sound output.

NOTE

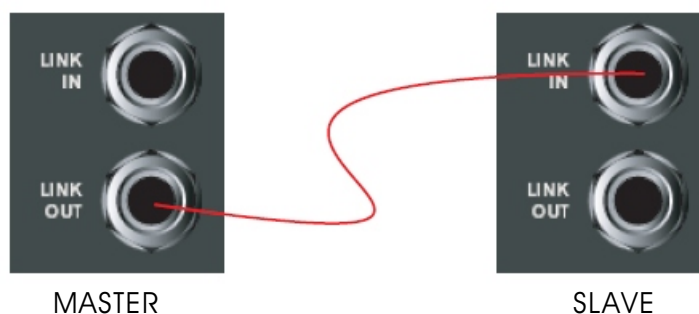
Inserting a 1/4-inch phone plug into AMP IN terminal disconnects internal power amplifier section from the mixer section.



[External equipments connection]

Expansion M series

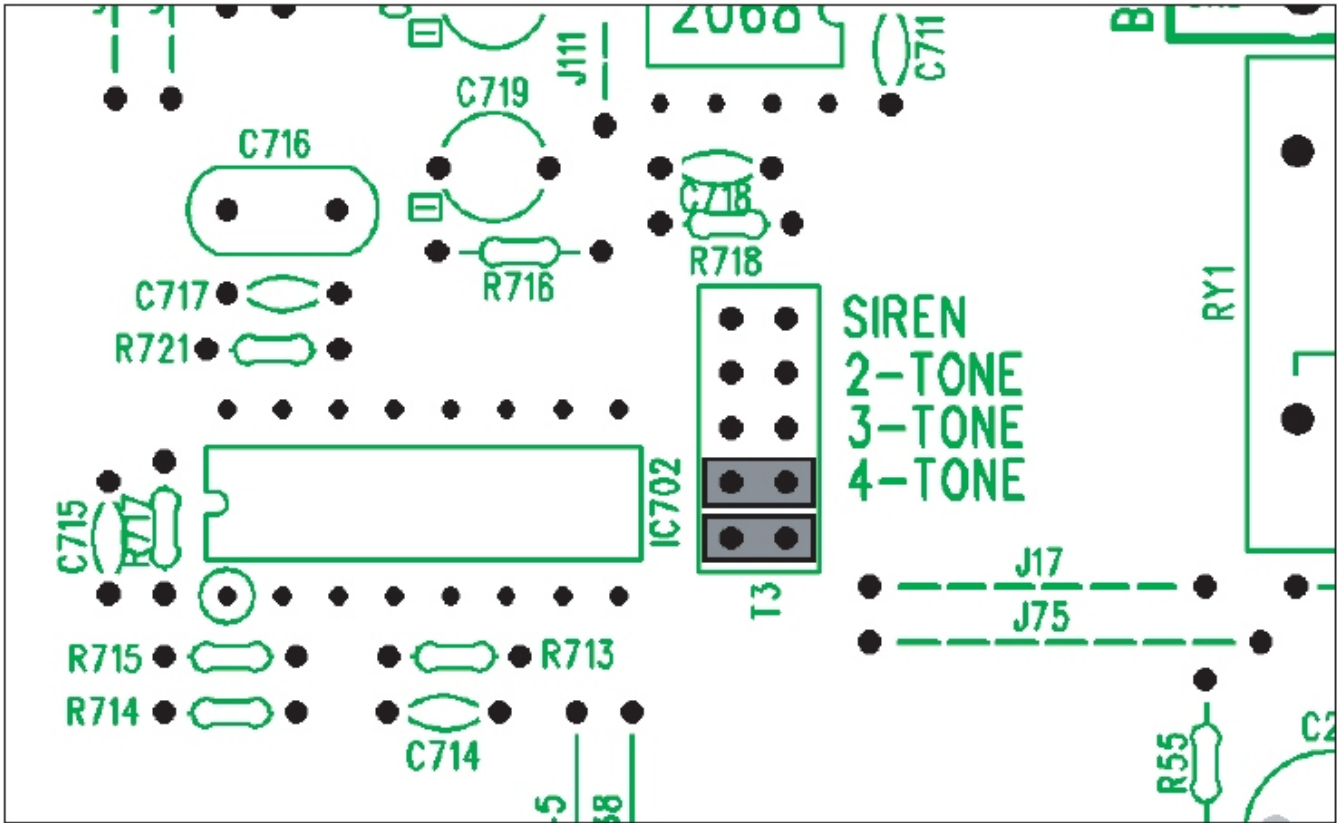
M series mixer-amplifier allows expansion with LINK IN and LINK OUT connector. If you need more input and output, just this function allows you can do that. This function affect which signals are heard when another mixer or M series mixer-amplifier are wired to the mixer-amplifier.



[Expansion M series]

Preannounce chime

M series mixer-amplifier supply user selectable 4 kinds of preannounce chime. The way of setup is same as follow figure .



[Chime selection]

Priority

This function allows talk over for MIC channel 1 and 2. All other input signals are muted when this function is activated during stay "ON" position. Figure shows the priority switches and its "ON" and "OFF" Positions.

Phantom power

M series mixer-amplifier supply DC + 15 Volts phantom power to use condenser microphone with MIC 1 and 2 channels. Figure shows the phantom power switches and its "ON" and "OFF" positions.



[Phantom and Priority]

Signal input gain control

M series mixer-amplifier can accept variable and wide range input signal with trim pot.

Adjusts the trim pot in a range of 44dB to accept variabe external equipments.

Figure 3.6 shows detail input sensitivities.



[Acceptable input sensitivity per each channels]

Priority Control

M series mixer-amplifier has three level priority mute function. When higher level source is activated, other input signals are muted except same priority level source.

CH3~CH6>CH1~CH2, Chime>Telephone paging.

Application

OFFICE TELEPHONE



TELE-PAGER



MUSIC SOURCE



SPA-60



SPA-120



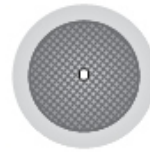
1F INFORMATION DESK



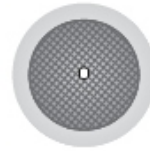
B1F PARKING CONTROL ROOM



E-MART



6F OFFICE



5F RESTAURANT



4F LADIES CLOTHING



3F MAN CLOTHING



2F SPORTS GOODS



1F MISCELLANEOUS GOODS



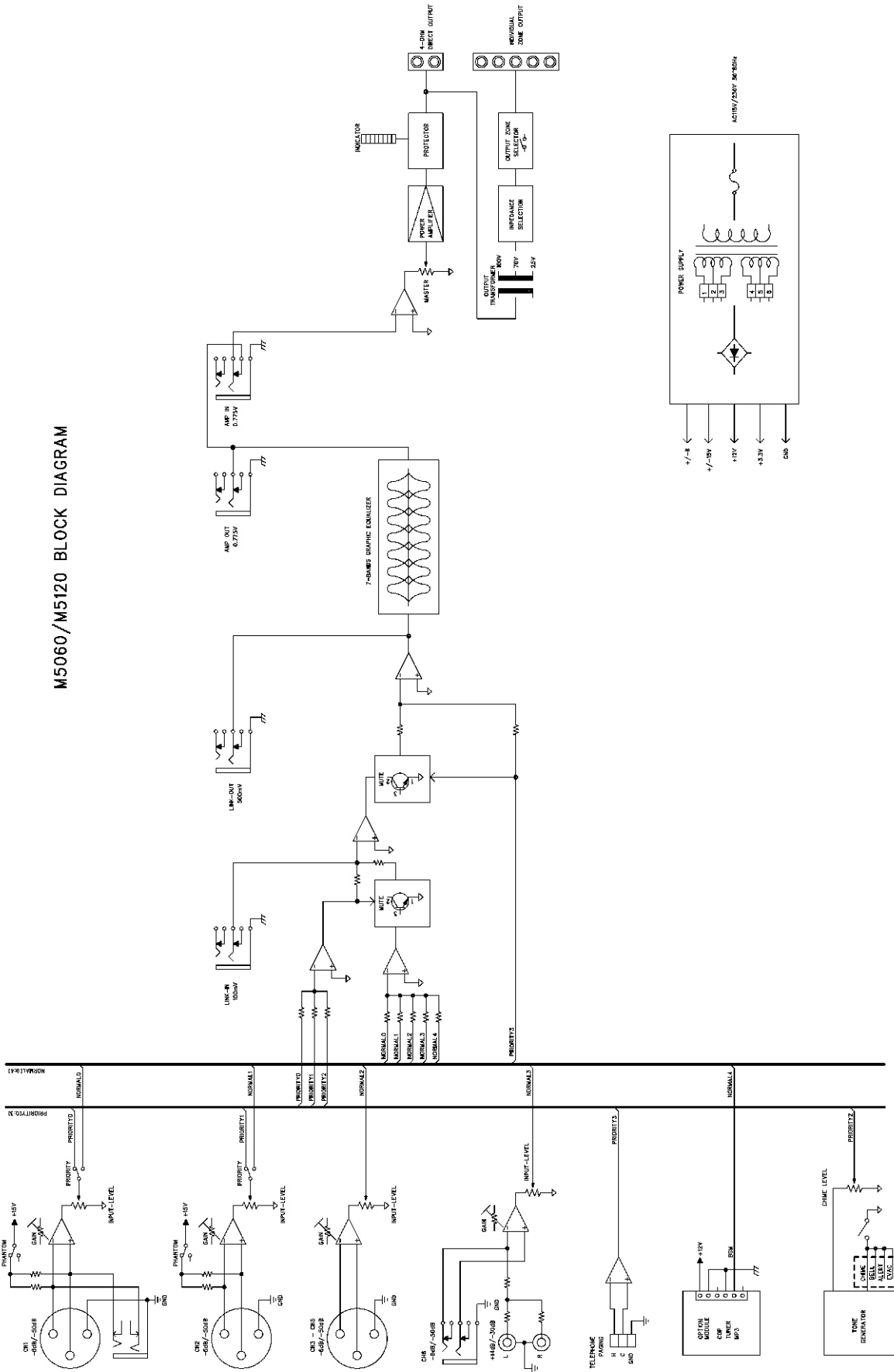
B1F GROCERY



B2F PARKING LOT

Block diagram

M5060/M5120 BLOCK DIAGRAM



Specification

Performance

| | | SPA-60 | SPA-120 |
|---|--|------------------------------------|--------------|
| Input Sensitivity for full output at maximum gain | Balanced Microphone Channels | -50dB \pm 3dB | |
| | Balanced Line Channels | -22dB \pm 3dB | |
| | Balanced Remote Microphone Station | -50dB \pm 3dB | |
| | Balanced Telephone Paging | -21dB \pm 3dB | |
| | Unbalanced Link-In | -17dB \pm 3dB | |
| | Unbalanced Amp-In | 0dB \pm 3dB | |
| Frequency Response | at 1 watt from speaker out tap. 100Hz~10kHz | +1.5dB / -3dB | |
| Graphic Equalizer | 125Hz,250Hz,500Hz,1kHz,2kHz,4kHz,8kHz | \pm 12dB \pm 3dB | |
| | Signal to Noise Ratio at rated power output | Better than 90dB | |
| | Crosstalk at all control maximum | -70dB at 1kHz | |
| | Rated Output Power at THD 0.5% | 60Watts | 120Watts |
| | Total Harmonic Distortion(THD) at 1kHz rated power | Less than 0.5% | |
| | Phantom Power | 15VDC | |
| | Power Band Width at 1kHz from speaker out tap | 80Hz~15kHz with less than 0.5% THD | |
| | DC Output Offset | Less than \pm 3mV | |
| Operating Temperature/Humidity at non-condensing | 0° ~40° C at 95% humidity | | |
| Output Voltage and Impedance | 4 Ω | 15.5V | 22V |
| | 25V | 10 Ω | 5.2 Ω |
| | 70V | 83 Ω | 42 Ω |
| | 100V | 165 Ω | 83 Ω |
| Construction | Cooling | Convection Cooled | |
| | Dimensions (Width/Height/Depth) | 420(W) x 88(H) x 320(D) mm | |
| | Net Weight | 8.72 kg | 9.76 kg |



Necessary modification are made without notification