

# Operation Manual

## Digital Amplifier **MA-110/110N**



**interM**



# Welcome

## A personal welcome to you from the management and employees of Inter-M

All of the co-workers here at Inter-M are dedicated to providing excellent products with inherently good value, and we are delighted you have purchased one of our products.

We sincerely trust this product will provide years of satisfactory service, but if anything is not to your complete satisfaction, we will endeavor to make things right.

Welcome to Inter-M, and thank you for becoming part of our worldwide extended family!

	<b>CAUTION</b> RISK OF ELECTRIC SHOCK DO NOT OPEN	
<p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK.</p> <p>DO NOT REMOVE COVER (OR BACK).</p> <p>NO USER-SERVICEABLE PARTS INSIDE.</p> <p>REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>		



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.

## WARNING

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

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.

\*WARNING FOR YOUR PROTECTION PLEASE READ THE FOLLOWING-WATER AND MOISTURE: Unit should not be used near water(e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so than objects do not fall and liquids are not spilled into the enclosure through openings.

\*Do not install this equipment in a confined space such as a book case or similar unit.

\*This apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such vases, shall be placed on the apparatus.

\*This apparatus shall be connected to a mains socket outlet with a protective earthing connection.

\*It has heed to be easy to disconnect the device. To disconnect the device from power, separate AC input cable from inlet or unplug the AC Cord.

### CAUTION

\*These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

### NOTE

\*This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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## Unpacking

Although your MA-110/110N is neither complicated nor difficult to operate, we recommend you take a few minutes to read this brief manual and familiarize yourself with the important information regarding product features, setup and operation.

As with most electronic devices, we strongly recommend you retain the original packaging. In the unlikely event the product must be returned for servicing, the original packaging (or reasonable equivalent) is required.

## Installation

### Environment

Never place this product in an environment which could alter its performance or reduce its service life. Such environments usually include high levels of heat, dust, moisture, and vibration.

## IMPORTANT SAFETY INSTRUCTIONS

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. A 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. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and 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, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



## Features

### - COMPACT DESIGN

Easy to install and operate with compact design of 1U size and functions.

### - DIGITAL AMPLIFIER CIRCUIT

Take up the Digital Amplifier Circuit with High efficiency of the rated power 100W, High reliability, Low weight and Low temperature.

### - SUPPLY POWER BY SMPS

Take up SMPS (Switching Mode Power Supply) for Low electric power and Low weight.

### - VARIOUS INPUT CONTROL FUNCTION

Control the each input channel level using the sound control volume of INPUT 1~3.

### - INPUT SIGNAL LEDS

Easy to check the inputted signal to INPUT 1~3.

### - TONE CONTROL FUNCTION

Separate Bass(100Hz) and Treble(10kHz) controls to tailor your sound.  
Easy to control the tone due to user frequency which is including bass and treble.

### - ADDITIONAL FUNCTIONS

Easy to use with the various additional functions including power of phantom MIC, TEL IN.

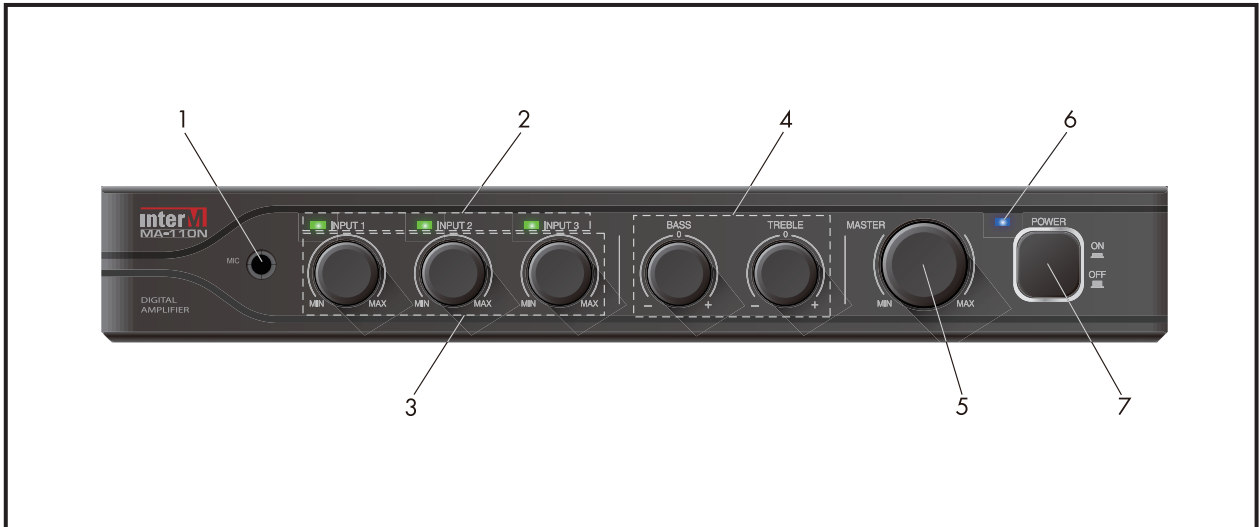
### - PRIORITY MUTING

Adopted the priority muting function which control the other input signal, by TEL IN and INPUT 1 signal and external MUTE.

## Operation

1. Before you plug the power cord to AC outlet, please set the power switch OFF, Tone Control center, and volume level minimum.
2. Please make sure the speakers and input jacks are properly connected before turn the power switch on.
3. Be sure the AC power is correct voltage before you plug into the power cord.
4. Please push the power switch, then the power input LED is on and the unit will be operated.
5. Please use your own with adjustment the volume using each input volume and master volume, the tone using the tone control.

## Front Panel



### 1. MIC INPUT JACK FOR INPUT 1 (6.3ø Phone Jack, Balanced)

This input allow you to connect balanced 6.3ø Phone Jack plugs.  
If this input is connected, Turn the inputting signal to INPUT 1 on the rear panel off.

### 2. INPUT SIGNAL LED

The SIGNAL LED is lighting by input signal of INPUT 1~3.

### 3. INPUT VOLUME

These knobs control the volume level of INPUT 1~3.

### 4. TONE CONTROL

These knobs provide continuous control of the high (10kHz) and low (100Hz) frequency response, by adding up to 10dB of cut (decrease) or boost (increase).

### 5. MASTER VOLUME LEVEL

This knob provides continuous control of the controlled overall signal level by each volume.

### 6. POWER LED

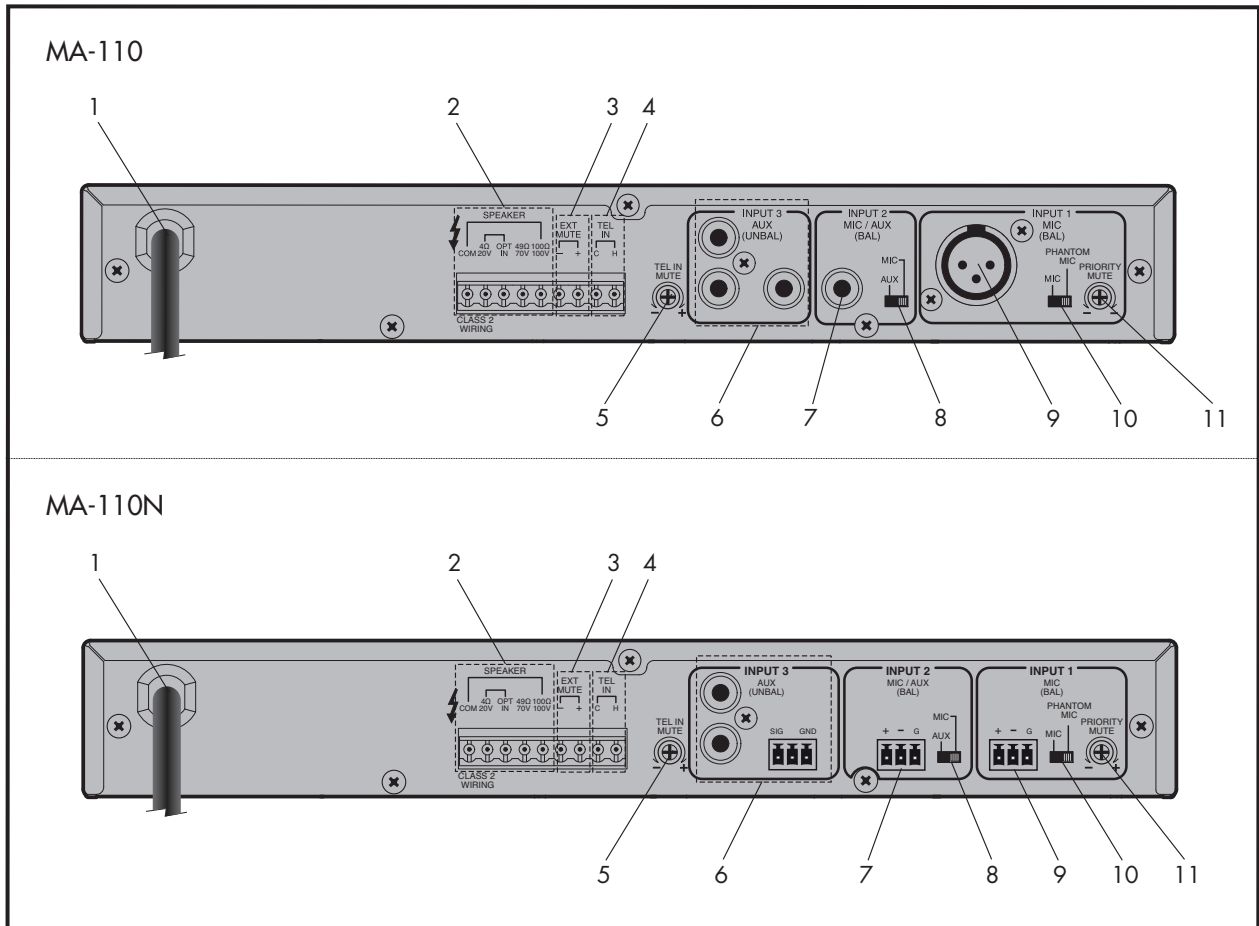
Display the power ON/OFF.

### 7. POWER SWITCH (PUSH TYPE)

Pressing the power switch turns the unit on. Pressing it again turns off.

\* This switch makes up that one pole be cut off when power is off.

## Rear Panel



### 1. AC POWER CORD

Connect this cable to an AC outlet.

### 2. SPEAKER OUTPUT TERMINAL

These terminals are used to connect speakers to the unit. You may select 4Ω conventional operation, or high impedance operation at either 70V/49Ω or 100V/100Ω.

Can't use these terminals at the same time.

NOTE: The unit is disable to operate in case of the total impedance is less than the rated impedance indicated. (If you're running speakers, you have to make sure total impedance does not go below the rated impedance.)

### 3. EXTERNAL MUTE CONTROL TERMINAL

Be able to use this terminal when you want to cut off the unit's output signal from the external equipment.

**4. TEL IN TERMINAL**

This is the audio signal input terminal of switchboard.

If the signal is inputted to the terminal, you are able to control the output of other input signals by the priority control volume of TEL IN.

**5. TEL IN PRIORITY CONTROL VOLUME**

This is able to control the mute level of INPUT 1~3 when the signal is inputted from the TEL IN terminal.

**6. INPUT 3 TERMINAL**

This is an unbalanced input terminal and connected with the external units.(CD, DVD, computer, etc.)

If you connect with computer, 'Y' jacks are required.

- MA-110

- MA-110N

6.3ø Phone Jack : Unbalanced

Euro Block : Unbalanced

RCA Jack : Unbalanced

RCA Jack : Unbalanced

**7. INPUT 2 TERMINAL**

This is a balanced input terminal and connected with the mic signal or the external units.

**8. INPUT 2 LEVEL SELECT SWITCH**

This switch selects the input signal of INPUT 2.

**9. INPUT 1 TERMINAL OF REAR PANEL**

This is a balanced XLR (MA-110) or Euro Block (MA-110N) input terminal that the signal is inputted.

If the front panel's MIC input terminal is connected with 6.3ø Phone Jack, the rear panel's MIC input terminal don't output the signal.

**10. SELECT SWITCH OF INPUT 1 PHANTOM MIC**

This switch selects a kind of INPUT 1's MIC on the rear panel.

Be able to use either DYNAMIC MIC or CONDENSER MIC, and the phantom power of +15V is supplied when using the condenser mic.

MIC : Select in case of using a general dynamic mic

PHANTOM MIC : Select in case of using a condenser mic

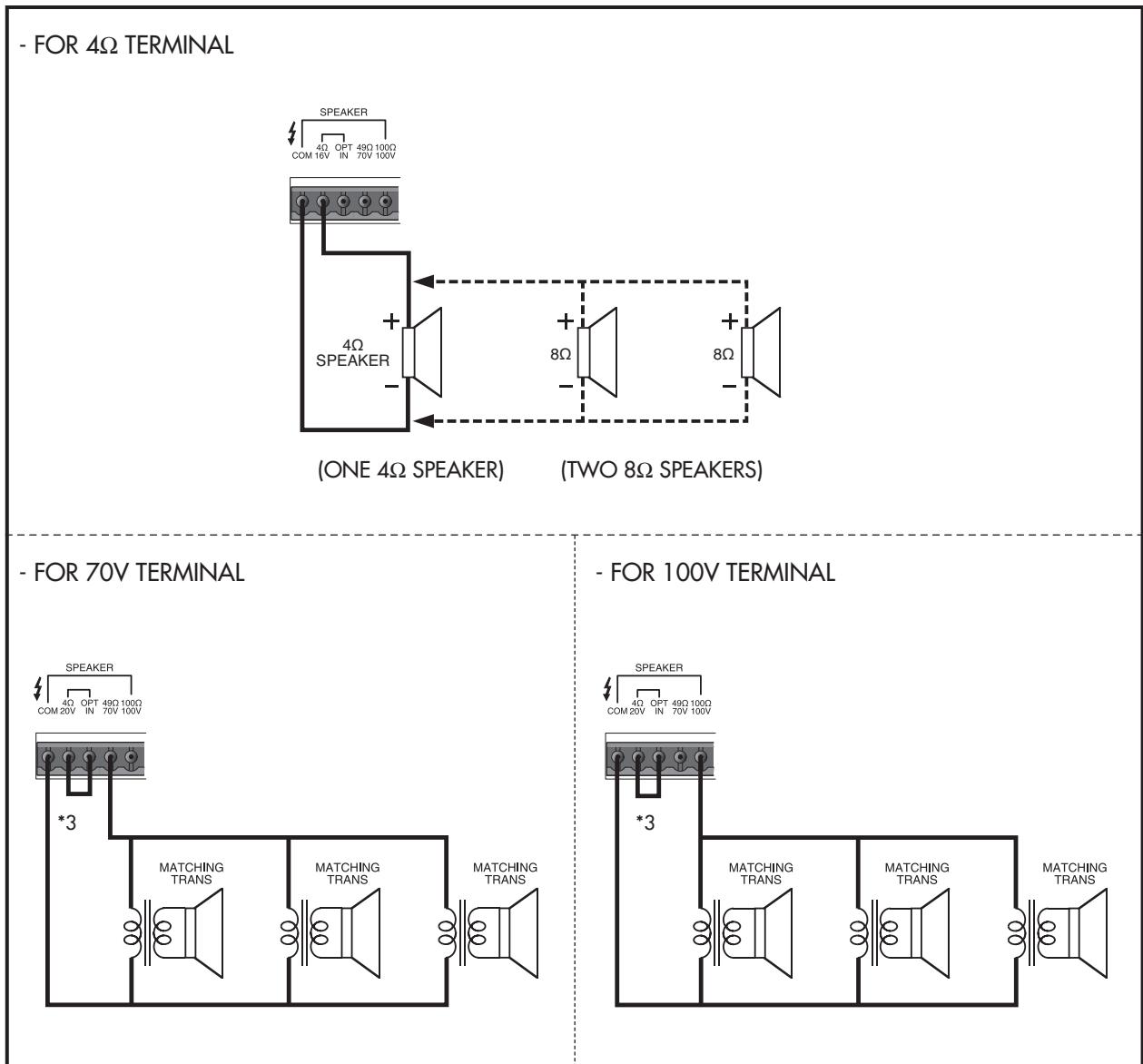
**11. THE PRIORITY CONTROL VOLUME OF INPUT 1**

The output of INPUT 2,3 is controlled by the priority control volume of INPUT 1 when the signal is inputted to the INPUT 1 terminal.



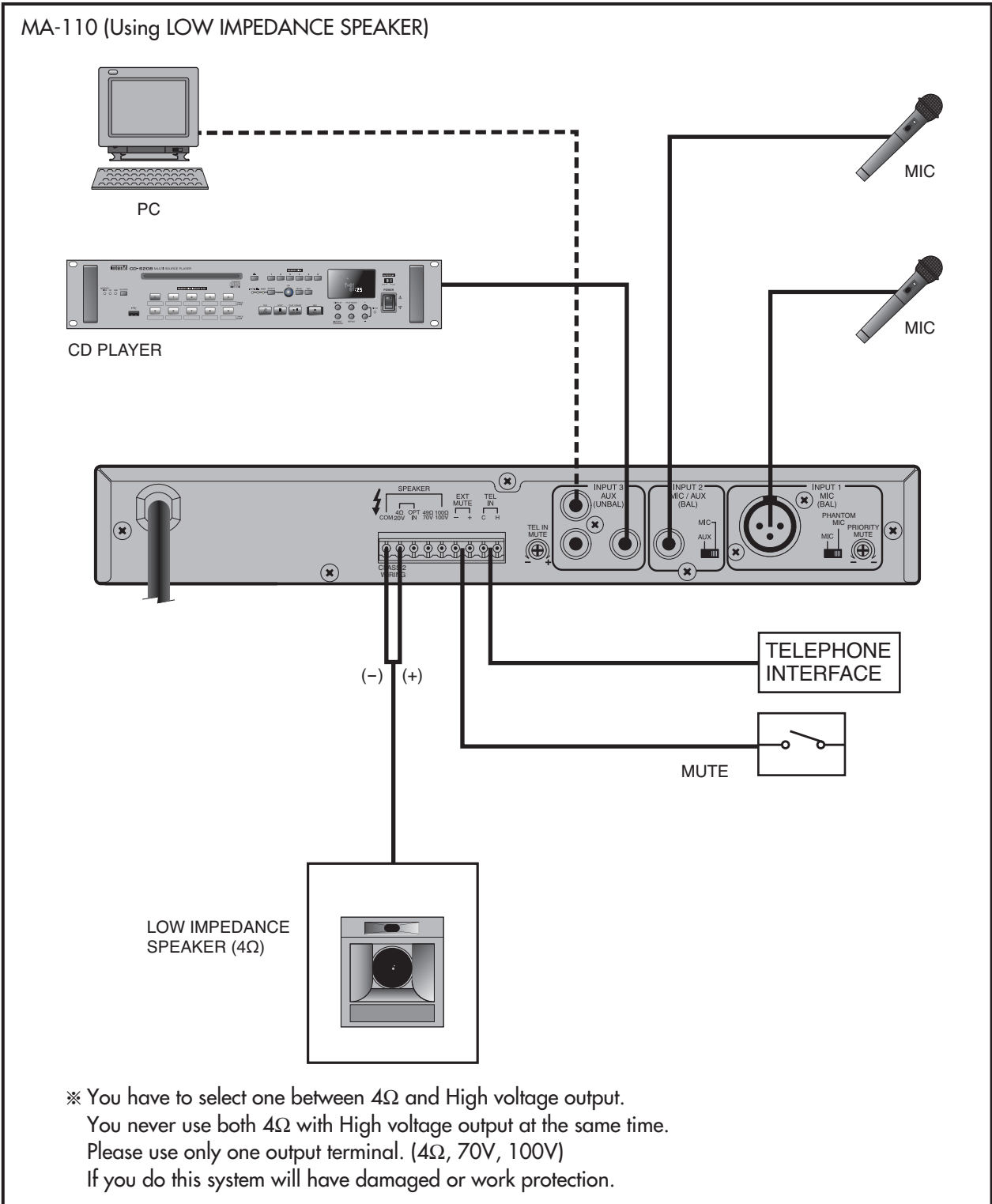
## Connecting Speakers

Before connecting speakers to MA-110/110N unit, be sure to disconnect the AC power cable.

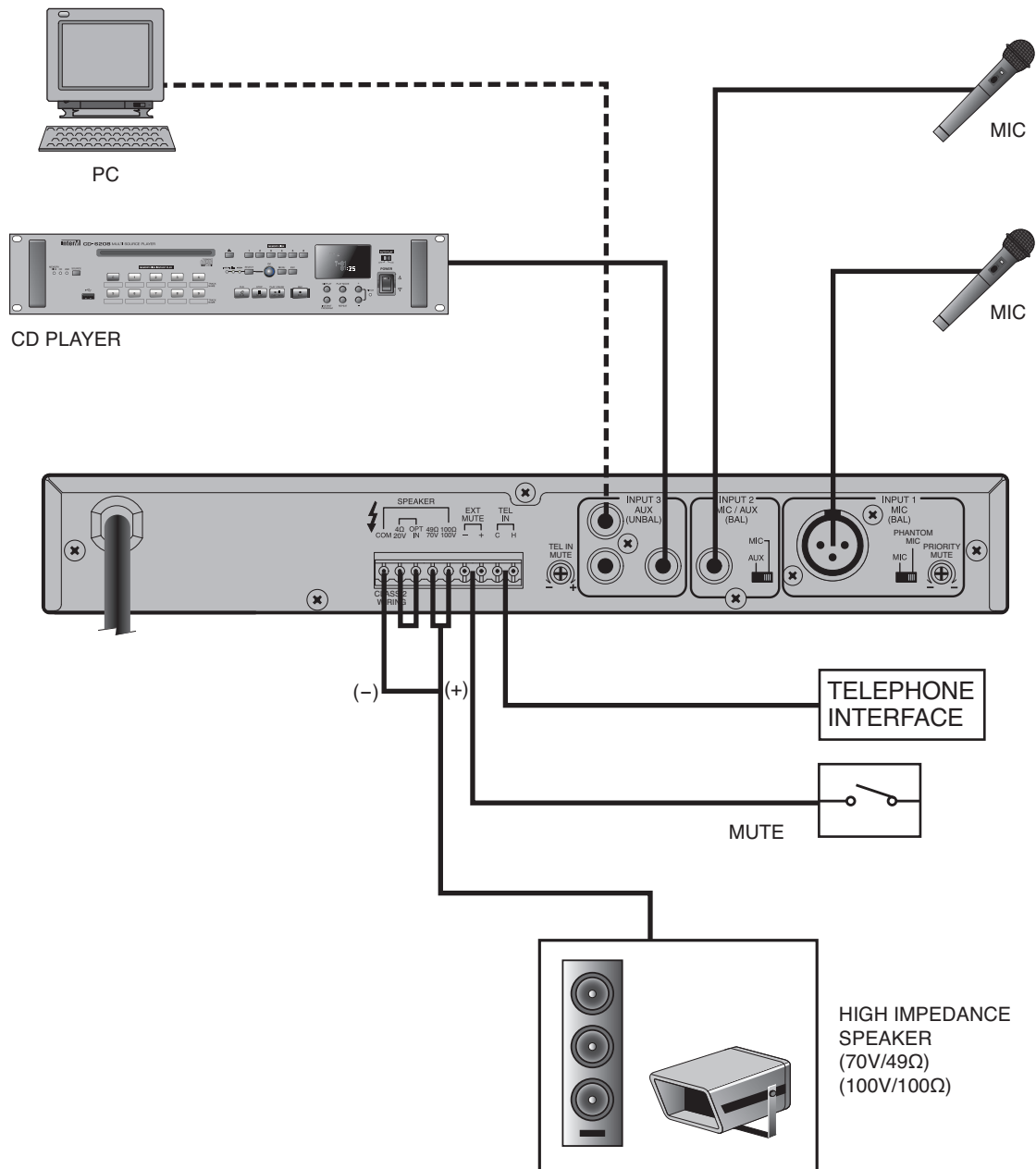


- NOTE :
1. Make certain that the total impedance is not less than the rated impedance indicated.
  2. Don't have to use several speaker terminals at the same time.
  3. If you're just dealing with the high impedance terminal, then make sure that 4Ω output terminal is connected with OPT-IN terminal.

# Applications

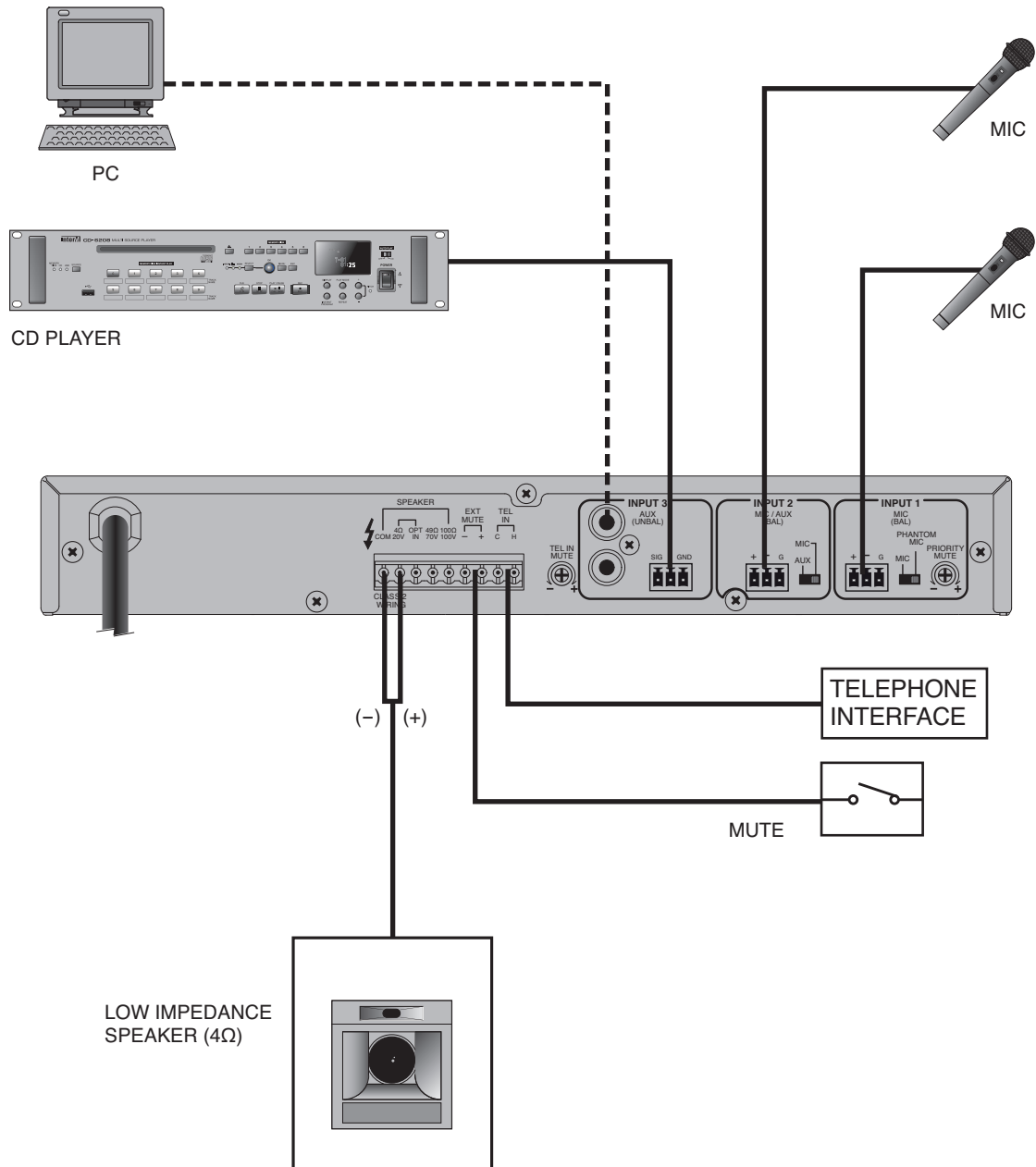


MA-110 (Using HIGH IMPEDANCE SPEAKER)



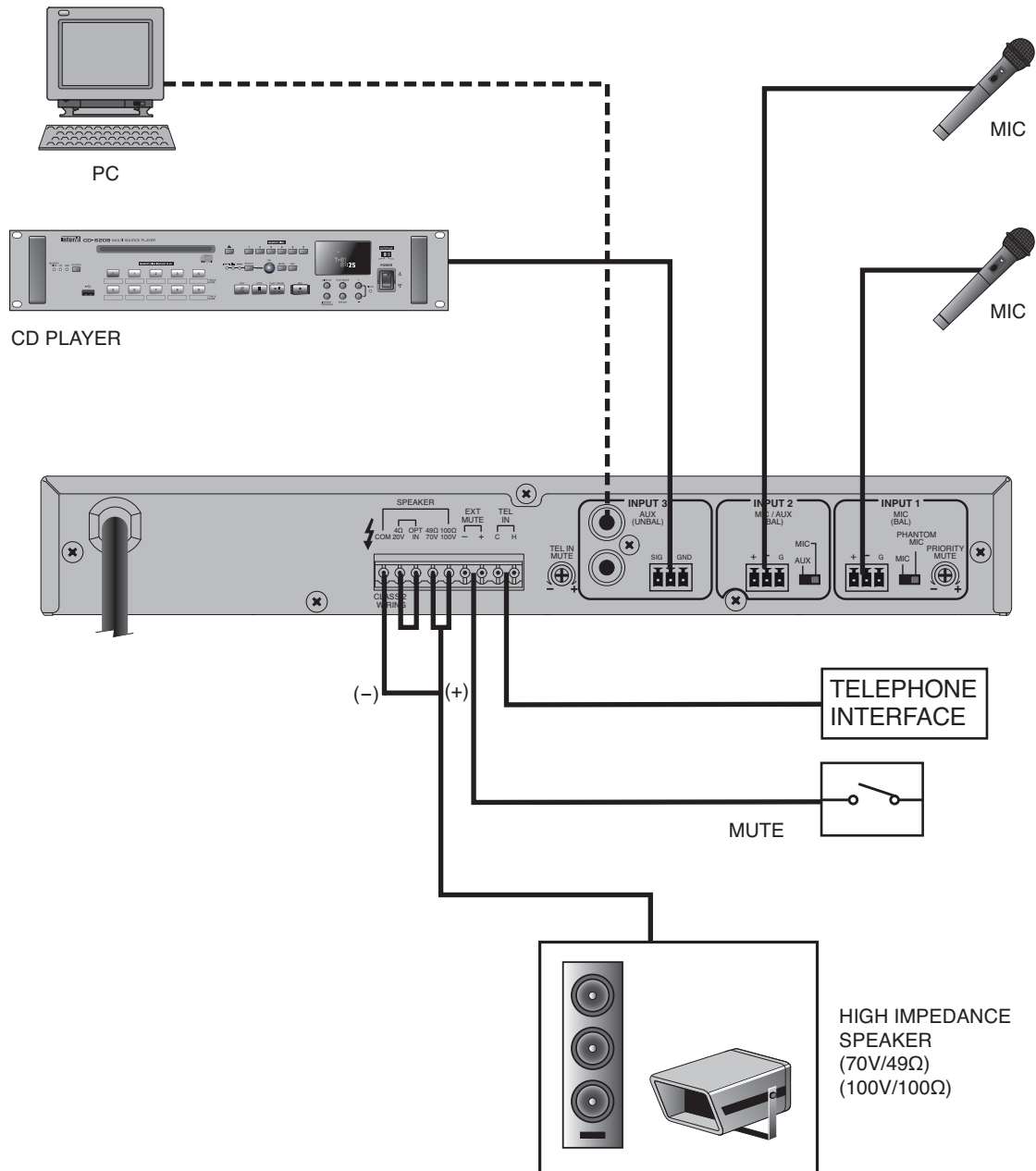
※ You have to select one between 4Ω and High voltage output.  
 You never use both 4Ω with High voltage output at the same time.  
 Please use only one output terminal. (4Ω, 70V, 100V)  
 If you do this system will have damaged or work protection.

MA-110N (Using LOW IMPEDANCE SPEAKER)



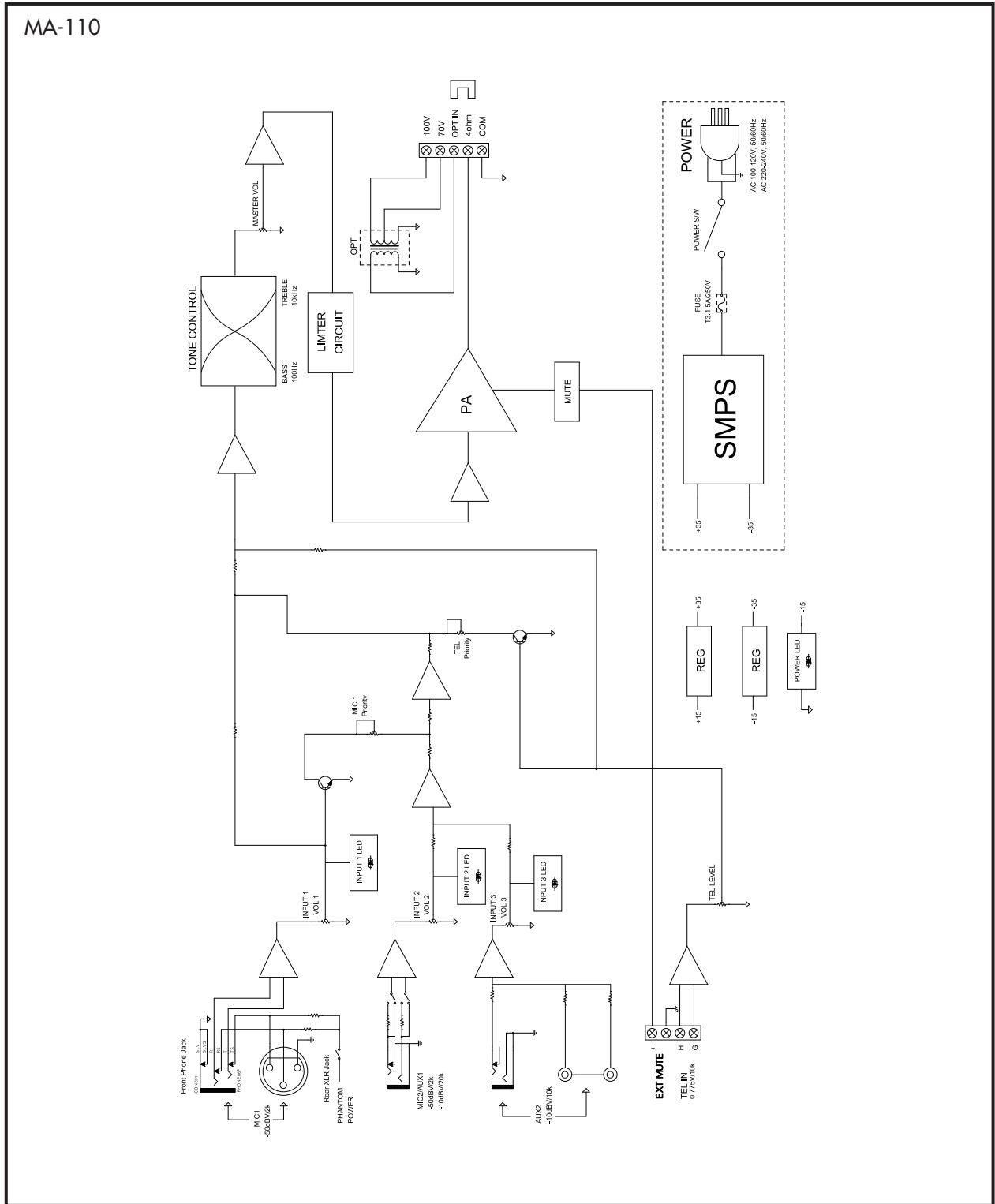
※ You have to select one between 4Ω and High voltage output.  
 You never use both 4Ω with High voltage output at the same time.  
 Please use only one output terminal. (4Ω, 70V, 100V)  
 If you do this system will have damaged or work protection.

MA-110N (Using HIGH IMPEDANCE SPEAKER)

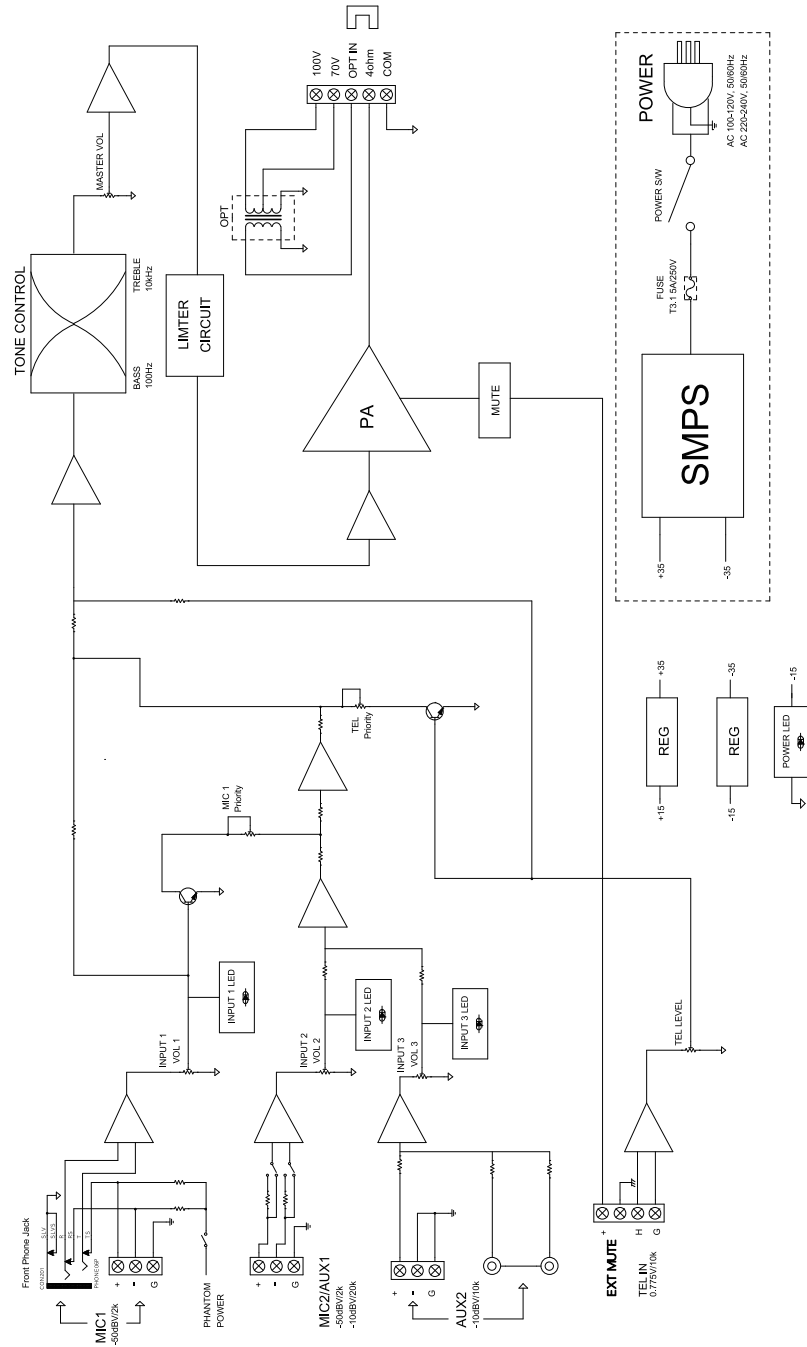


※ You have to select one between 4Ω and High voltage output.  
 You never use both 4Ω with High voltage output at the same time.  
 Please use only one output terminal. (4Ω, 70V, 100V)  
 If you do this system will have damaged or work protection.

# Block Diagram



MA-110N



## Specifications

\* 0dBV = 1.0Vrms

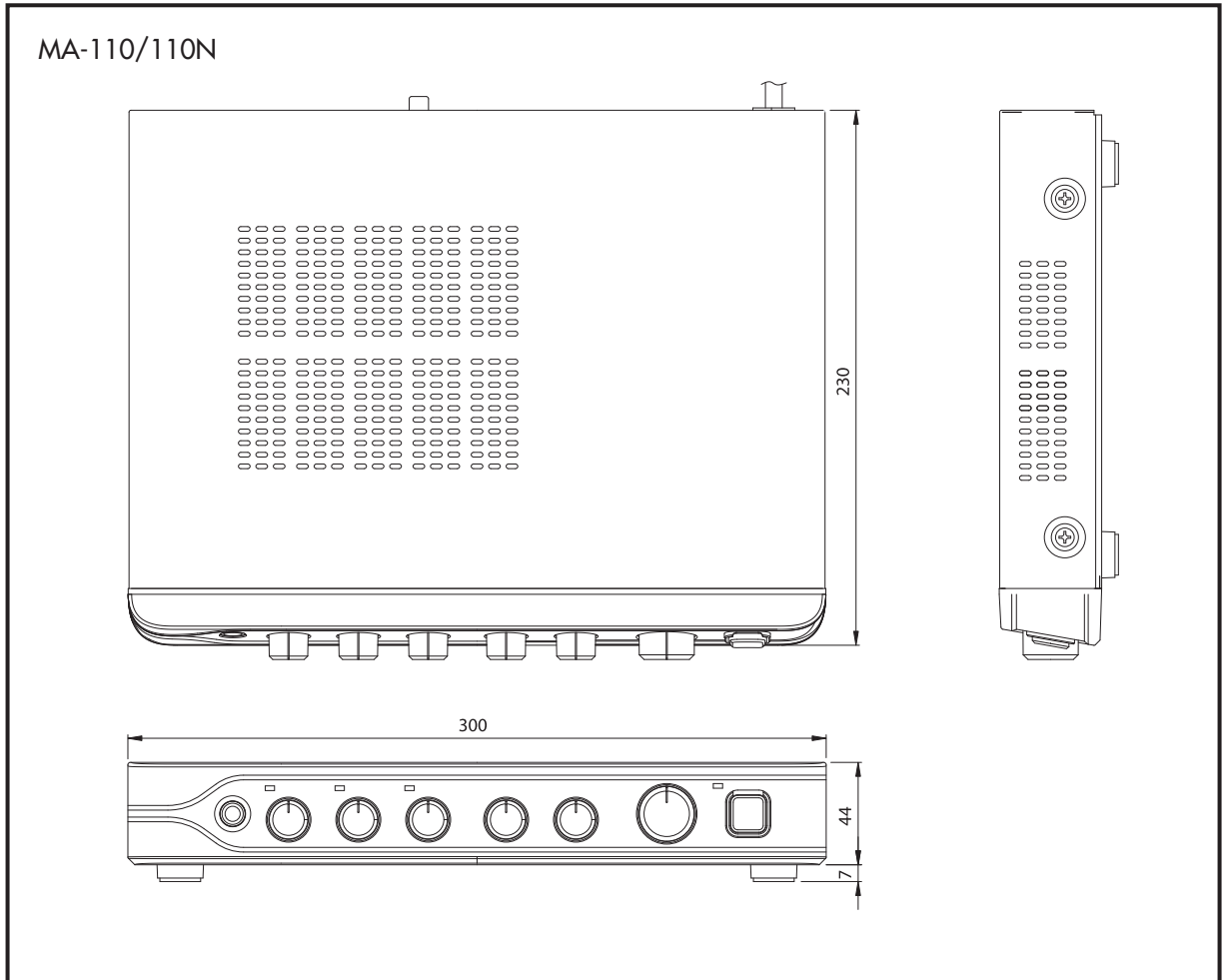
		MA-110	MA-110N
Rated Output Power		100W	
Speaker Output Power / Impedance		20V/4Ω, 70V/49Ω, 100V/100Ω	
Input Sensitivity / Impedance	INPUT 1	-50dBV / 2kΩ	
	INPUT 2(MIC)	-50dBV / 2kΩ	
	INPUT 2(LINE)	-10dBV / 20kΩ	
	INPUT 3	-10dBV / 10kΩ	
	TEL IN	0.775 / 10kΩ	
Frequency Response (@ 1W, 4Ω)		80Hz ~ 18kHz	
T.H.D (at 1kHz Rated Output)		Less than 1% at 100W(with AES-17 filter)	
S/N	INPUT 1,2	Better than 60dB	
	INPUT 3, TEL IN	Better than 70dB	
Tone Control	BASS (100Hz)	±10dB	
	TREBLE (10kHz)	±10dB	
Operating Temperature		-10°C ~ +40°C	
Power Source		100-120VAC or 220-240VAC, 50/60Hz (Supplied AC mains depends on country requirements)	
Power Consumption		30W	
Weight		3.05kg/6.7lb	
Dimensions		300(W) x 44(H) x 230(D)mm/11.8(H) x 1.7(H) x 9.1(D)in	

\* Design and specification are subject to be changed for the improvement of product quality without pre notice.

- ※ **Remark:** 1. All specifications are measured with AES-17 filter.  
 2. This system is used digital Amplifier (PWM Modulation) so the PWM leakage signal will appear to output terminal, but it doesn't matter. You can't hear the PWM leakage sound because of PWM frequencies is very higher than Audio frequencies.



※ DIMENSIONS



## Service

### Procedures

Take steps to insure the problem is not related to operator error or other products within the system. Information provided in the troubleshooting portion of this manual may help with this process. Once it is certain that the problem is related to the product contact your warranty provider as described in the warranty section of this manual.

### Schematic

A Schematic is available by contacting your warranty provider.

### Parts List

A Parts List is available by contacting your warranty provider.

## Variations and Options

### Variations

Products supplied through legitimate sources are compatible with local AC power requirements.

### Options

No optional items are available for this product.

## Warranty

Warranty terms and conditions vary by country and may not be the same for all products. Terms and conditions of warranty for a given product may be determined first by locating the appropriate country which the product was purchased in, then by locating the product type.

To obtain specific warranty information and available service locations contact Inter-M directly or the authorized Inter-M Distributor for your specific country or region.



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