

Operation Manual

Mixing Amplifier **PA-360/480/600**



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!



WARNING

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

*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.

*CLASS 2 WIRING (Adjacent to speaker terminal): The speaker output of this apparatus can exceed 10 Watts and could be a shock injury. Connection to speakers should be performed by a skilled person.

*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.



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.

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Unpacking

Although your PA-360/480/600 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.



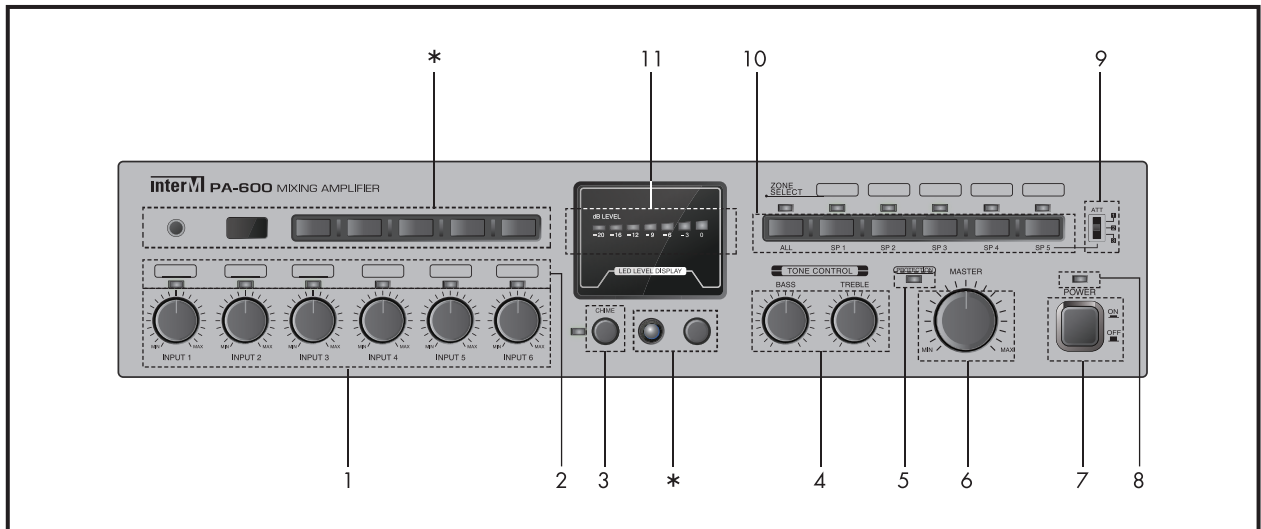
Features

- 2U Size
- 360W /480W /600W output power
- SMPS delivers high power output with low power consumption and weight reduction
- 5 Microphone/Line Inputs, EXT IN and TELL IN with individual volume control
- Input Level LED Monitor per channel
- Separate BASS/TREBLE Tone Controls
- 5 zone selection switches
- Independent built-in Attenuator over Zone 5.(Maximum 50W, more than 200Ω)
- PRIORITY
- Remote MUTE and CHIME terminal
- VCA Remote volume controll

Operation

1. Make sure the power switch on the front of the unit is set to off and connect the power cord to the mains outlet. Please set each input volume control to minimum position and set the tone controls to 0dB before turning on the power switch.
2. Make sure the speaker cables and input cables are properly connected.
3. Before connecting power, always check the voltage of main power supply. (AC 220V or AC 110V)
4. After completing all connections, turn on the power switch, and check to confirm that the power indicator lights.
5. Use input level control for corresponding to desired mixing volume levels and set the output level with master volume control.
6. Use the Treble/Bass tone controls to change the tone of the output source.

Front Panel



1. INPUT LEVEL CONTROL

Controls the level of each of the six input channels.

2. INPUT SIGNAL INDICATOR

These LEDs light green when input signal is present.

3. CHIME SWITCH

It activates the four tone chime circuitry. The chime indicator lights green when chime is on use.

4. TONE CONTROL

Controls the bass (100Hz) and treble (10KHz) tones of the main amplifier output.

5. PROTECTION MODE INDICATOR

Indicated that the amplifier is in failure protection mode.

6. MASTER VOLUME CONTROL

The master volume control to collectively control the sound level of all outputs and by turning the knob clockwise to increase the volume and counterclockwise to decrease it.

7. POWER SWITCH

8. POWER INDICATOR

This LED Lights green when the unit is powered on.

* This terminal and switch is used on the advanced model PMU-360N/480N/600N.
It is not available for this product.

9. ATTENUATOR

Built-in ATTENUATOR over zone 5, It allows to decrease the output volume independently from master volume.

Mode	100V Output	70V Output
Switch mode 1	100V	70V
Switch mode 2	70V	49V
Switch mode 3	50V	35V

※ Caution : ZONE 5 is output terminal with ATTENUATOR function, and a recommended speaker is lower than 50W(total impedance is upper than 200ohm). Please be careful of connecting the speakers.

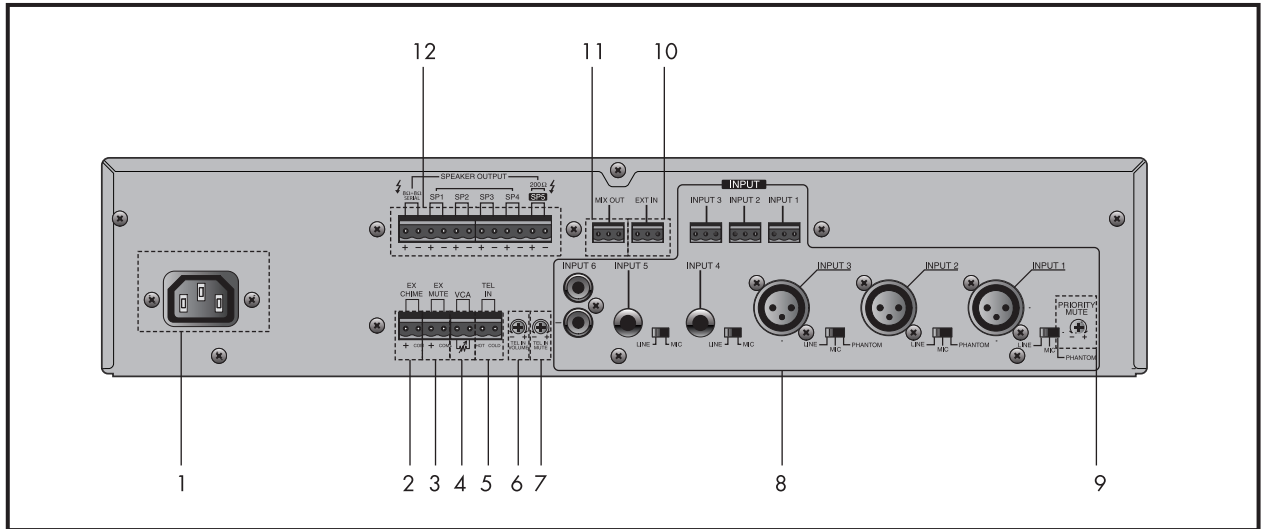
10. ZONE SELECTION SWITCH

Use the zone selection switches to route the program audio from the amplifier output to speaker zone 1 through zone 5. The All button controls turns ON/OFF all zones. The Indicators lights on when zone selection switches indicates if the zone is on.

11. OUTPUT LEVEL DISPLAY

Displays the output level meter, each bar is marked in intervals of 3 to 5dB.

Rear Panel



1. AC MAINS (AC INLET)

It accepts a standard IEC mains cable, provided.

2. REMOTE CHIME SWITCH TERMINAL

This terminal is used to activate the 4 tone chimes remotely.

3. MANUAL MUTE TERMINAL

When these two terminals are shorted, the output signal is blocked and the protection indicator on the front panel flashes.

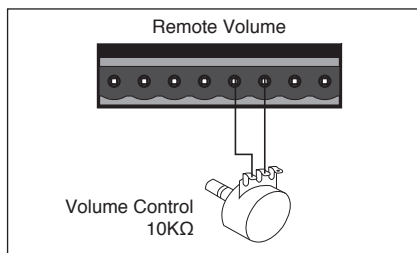
4. VCA (VOLTAGE CONTROLLED AMPLIFIER) TERMINAL

These two terminals provide connection for an external potentiometer. When the potentiometer is connected, it allows for remote control of the master volume level.

Note that individual input volume control positions limit the maximum output level adjustable with the remote volume control.

※ Make sure not to set the main volume control to minimum level.

- Connection of remote volume control



※Note : Negative terminal should not be grounded. Never connect it to the unit's chassis or other circuit ground.

5. TEL IN TERMINAL

This terminal is provided for connection with a telephone exchange system for paging purposes.

※NOTE : When the telephone input is active, all other input signal except AMP IN are muted.

6. TEL IN VOLUME CONTROL

It controls the volume of the TEL IN.

7. TEL IN PRIORITY VOLUME CONTROL

It controls the mute level of all other input signal when the TEL IN signal is present

8. INPUT 1~6

INPUT 1~6 are utilized to connect various external sound source devices including MIC, CD, TUNER, and other.

1) INPUT 1~3 are provided on balanced XLR JACKs and EURO Terminals Each input have a 3 position level and phantom power selector switch.

- LINE: used for LINE level signal input.

- MIC: used for the MIC level signal input such as dynamic mics.

- PHANTOM: used to power condenser type mics with DC 24V.

※NOTE : Because INPUT 1~3 XLR Jacks are in parallel with the Euro terminal, do not use them simultaneously.

2) INPUT 4~5 are provided on balanced TRS inch JACKs. Each input has a 2 position level selector switch.

- LINE: used for LINE level signal input.

- MIC: used for the MIC level signal input such as dynamic mics.

3) INPUT 6 is provided on stereo summing RCA JACKs.

9. PRIORITY VOLUME CONTROL

It controls the priority control volume when the signal is inputted to the INPUT 1~2, EXT IN, CHIME and SIREN.

※ The signal from INPUT 1~2, EXT IN, CHIME input has priority over all other input signal and BGM broadcasting.

10. EXT IN

This line-level input connects an external mixer to the amplifier expanding input channels.

11. MIX OUT

This line-level output connects the amplifier to an external processing unit or recorder.

12. SPEAKER OUTPUT TERMINAL

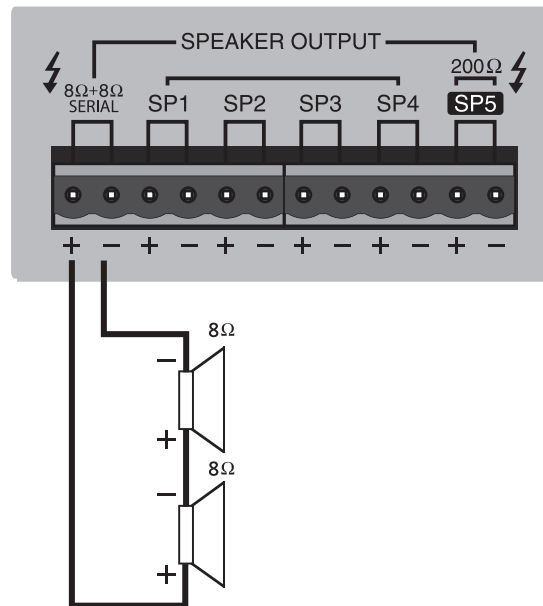
Speaker Output Output Terminal	100V		70V	
	LOW-Z	HIGH-Z	LOW-Z	HIGH-Z
PA-360	76V / 8Ω + 8Ω	100V / 28Ω	70V / 8Ω + 8Ω	70V / 14Ω
PA-480	88V / 8Ω + 8Ω	100V / 21Ω	70V / 8Ω + 8Ω	70V / 10Ω
PA-600	100V / 8Ω + 8Ω	100V / 16Ω	70V / 8Ω + 8Ω	70V / 8Ω

※ Please note that SP 1~5 terminal will be controlled by speaker selector switch of front panel.

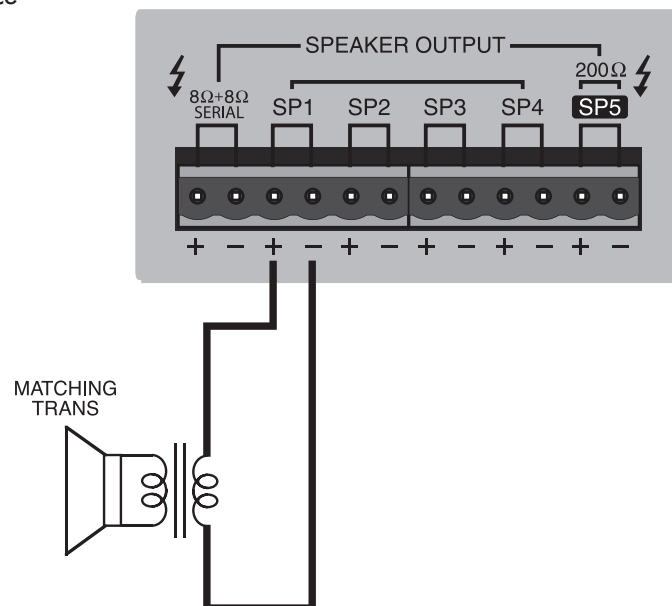
Speaker Connection

Before connecting speakers to the unit, be sure to disconnect the AC power cable. Make certain that the total impedance is not less than the rated impedance indicated.

- $8\Omega + 8\Omega$ Impedance



- High Impedance



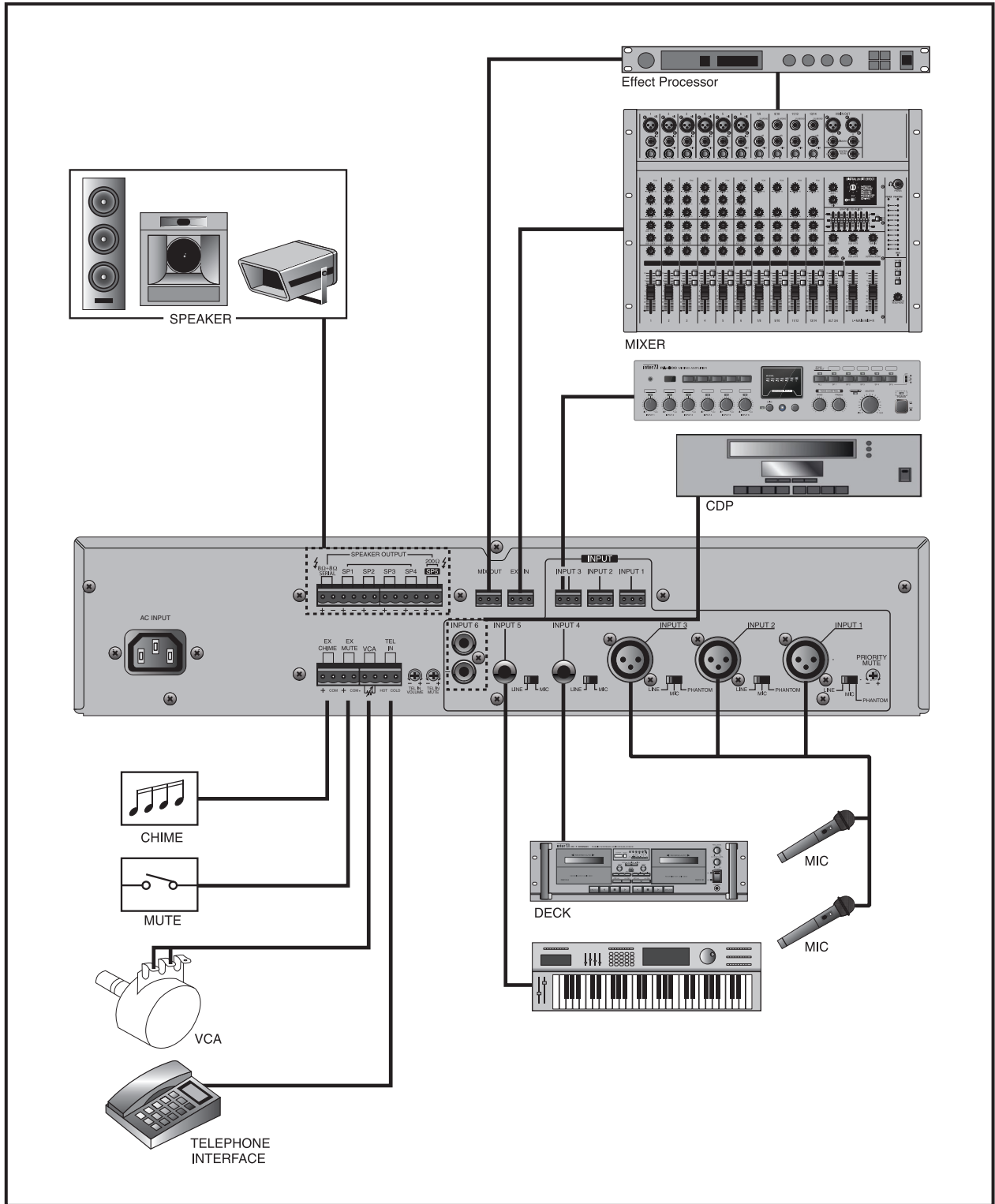
※ Warning : For high impedance systems, connect with matching transformer as the following Figure. Be certain that the total impedance does not equal less than the rated impedance.

SP 5 is output terminal with ATTENUATOR function, and a recommended speaker is lower than 50W(total impedance is upper than 200ohm). Please be careful of connecting the speakers.

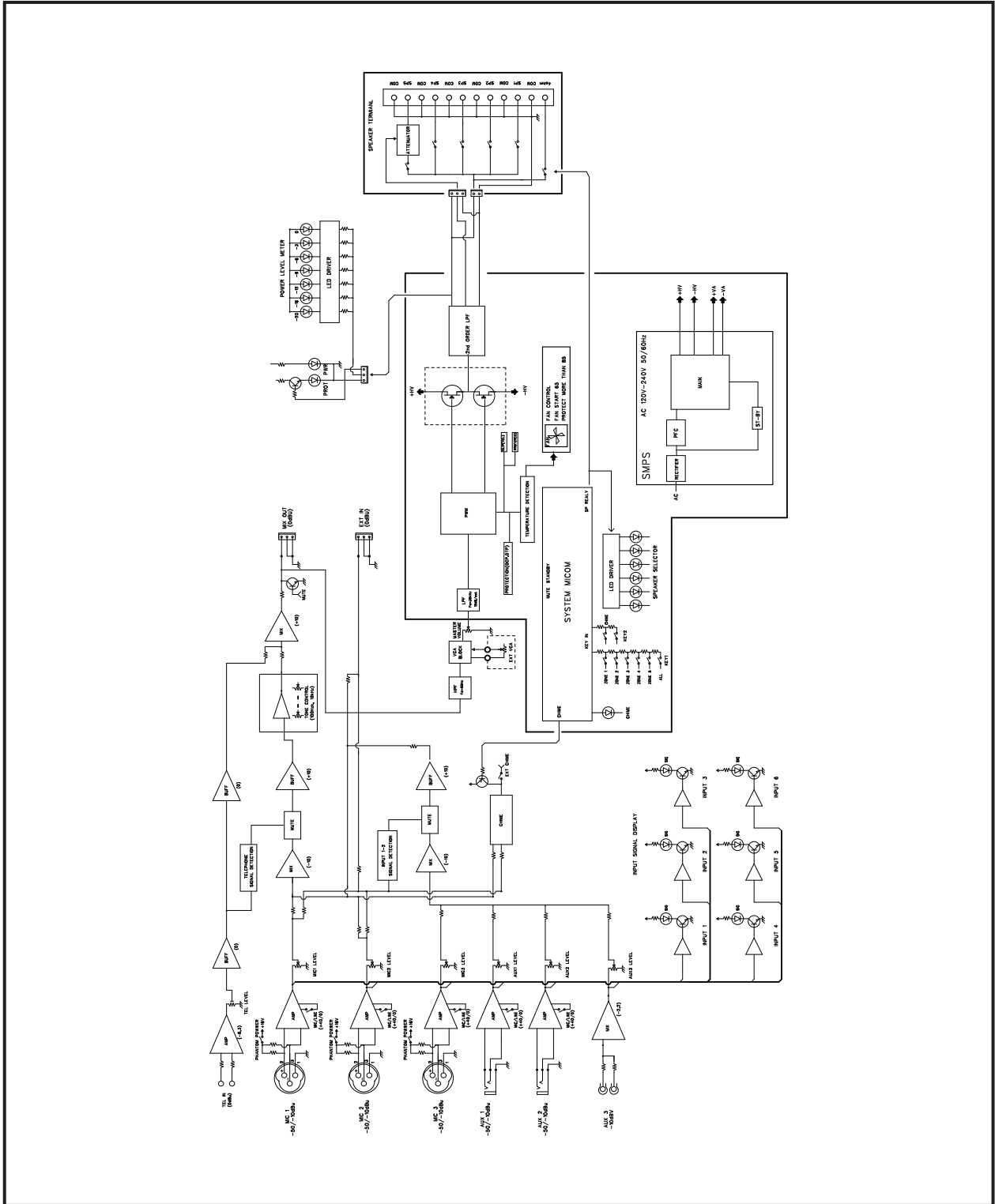
	Low Impedance	(100V)	(70V)
PA-360	8Ω+8Ω	28Ω	14Ω
PA-480	8Ω+8Ω	21Ω	10Ω
PA-600	8Ω+8Ω	16Ω	8Ω

Please do not use a 8Ω+8Ω and SP1~SP5 terminal at the same time.

System Connection



Block Diagram

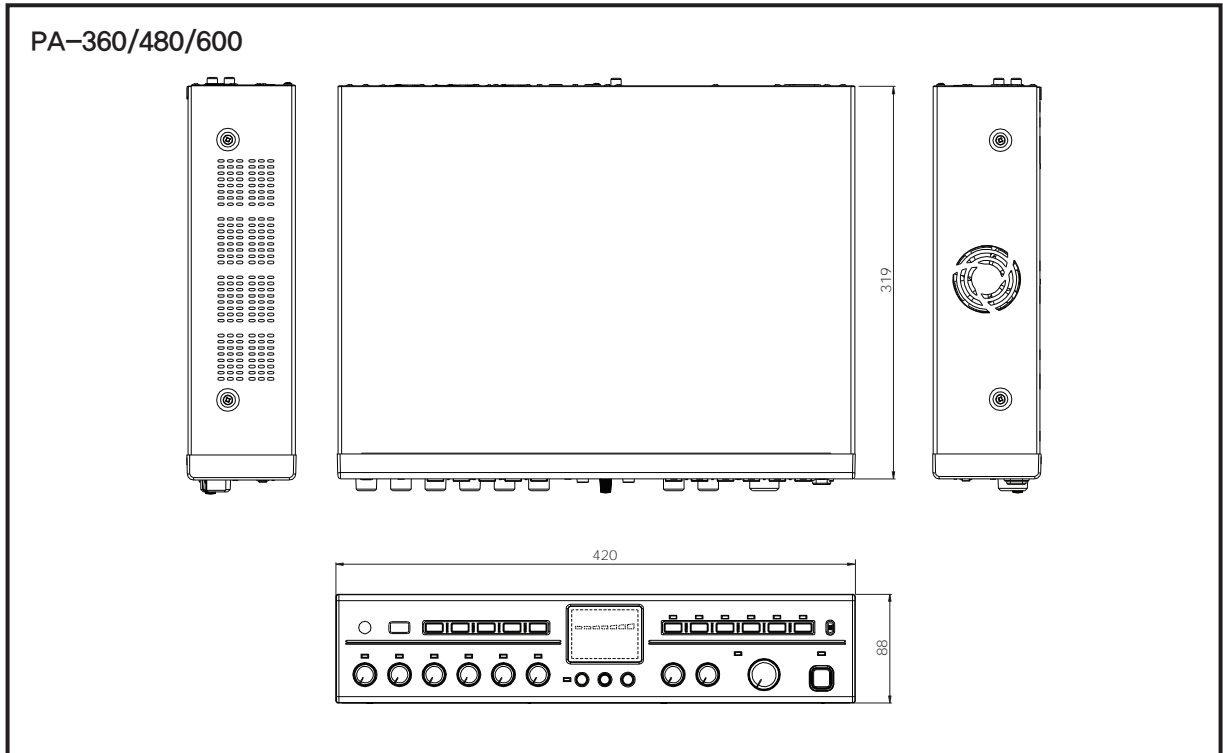


Specifications

			PA-360	PA-480	PA-600
Rated Output Power			360W	480W	600W
Frequency Response (SP OUT/1W output)			80Hz~15kHz		
T.H.D (Rated Output, 1kHz)			Less than 0.5%		
S/N (Rated Output)			More than 70dB		
Tone Control (100Hz, 10kHz)			±10dB		
Input Sensitivity/ Impedance	Input 1~5	MIC	-50dBu/2kΩ		
		LINE	-10dBu/2kΩ		
	Input 6		-10dBu/10kΩ		
	TEL IN		0dBu/10kΩ		
	EXT IN		0dBu/20kΩ		
	MIX Out/Impedance		0dBu/10kΩ		
Speaker Output Level/Impedance	LOW-Z		76V/8Ω+8Ω 70V/8Ω+8Ω	88V/8Ω+8Ω 70V/8Ω+8Ω	100V/8Ω+8Ω 70V/8Ω+8Ω
	HIGH-Z		100V/28Ω 70V/14Ω	100V/21Ω 70V/10Ω	100V/16Ω 70V/8Ω
Operation Temperature			-10°C ~ +40°C		
Power Source			100-120VAC or 220-240VAC; 50/60Hz (Supplied AC mains transformer depends on country requirements)		
Power Consumption (1/8W output)			80W	100W	160W
Weight (SET)			5.2kg/11.5lb		
Dimensions (SET)			420(W)x88(H)x319(D)mm/16.5(W)x3.5(H)x12.6(D)in		

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

※ 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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Inter-M, Ltd. (Korea) began operations in 1983.

Since then, Inter-M has grown to become one of the largest manufacturers of professional audio and commercial sound electronics equipment in the world.

Inter-M has gained worldwide recognition for its own branded products, as well as private label manufacturing of electronics sold under other names (OEM).

The company is no longer just a Korean company, but rather a global company that is truly international in scope, with factories and offices in Korea and China, and sales and marketing operations located in Japan, Europe, and the U.S.A.

With more than 850 employees around the globe, Inter-M is well-poised for further growth and expansion.

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