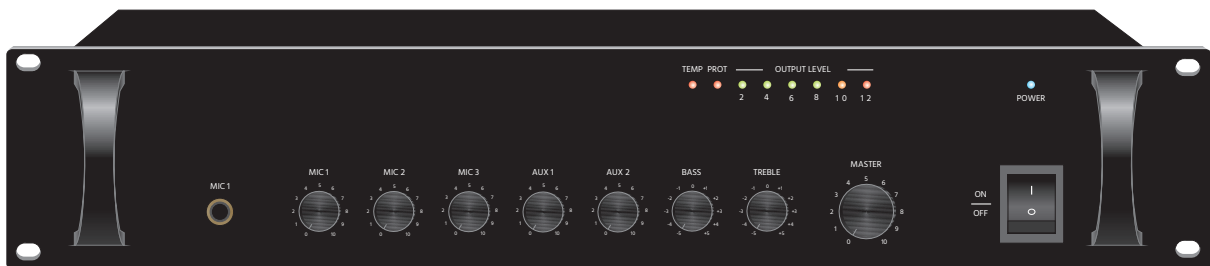


5 Channel 100/70V Mixer Amp with Microphone Input



60-Watt
120-Watt
240-Watt

User's Manual

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SAFETY WARNINGS AND GUIDELINES

- Do not install this device on an unstable surface where it could fall and cause either personal injury or damage to the device and/or other equipment.
- This device is intended for indoor use only.
- Do not expose this device to water or moisture of any kind. Do not place drinks or other containers with moisture on or near the device. If moisture does get in or on the device, immediately unplug it from the power outlet and allow it to fully dry before reapplying power.
- Do not touch the device, the power cord, or any other connected cables with wet hands.
- Do not expose this device to excessively high temperatures. Do not place it in, on, or near heat sources, such as a fireplace, stove, radiator, etc. Do not leave it in direct sunlight.
- This device ventilates excessive heat through the slots and openings in the case. Do not block or cover these openings. Ensure that the device is in an open area where it can get sufficient airflow to keep from overheating.
- Do not place or install this device in an area where it can be exposed to excessive amounts of dust, humidity, oil, smoke, or combustible vapors.
- Use only in a well-ventilated area. Do not use in close, confined spaces.
- Prior to operation, check the unit and power cord for physical damage. Do not use if physical damage has occurred.
- Before plugging the unit into a power outlet, ensure that the outlet provides the same type and level of power required by the device.
- This device uses a grounded power cord and requires a ground connection for safe operation. Ensure that the power source has a proper ground connection. Do not modify the plug or use a "cheater" plug to bypass the ground connection.
- Disconnect the unit from the power source when replacing the fuse. Replace the fuse only with the same type.
- Unplug this device from the power source when not in use.

- Take care to prevent damage to the power cord. Do not allow it to become crimped, pinched, walked on, or become tangled with other cords. Ensure that the power cord does not present a tripping hazard.
- Never unplug the unit by pulling on the power cord. Always grasp the connector head or adapter body.
- Ensure that power is turned off and disconnected before making any electrical connections.
- Clean using a soft, dry cloth only. Do not use chemical cleaners, solvents, or detergents. For stubborn deposits, moisten the cloth with warm water.
- This device has no user serviceable parts. Do not attempt to open, service, or modify this device.
- If using this amplifier to drive a 70V or 100V speaker array, ensure that the total wattage rating of the speaker array does not exceed 80% of the amplifier's rated RMS power level, i.e., 48 (18803), 96 (14886), or 192 (18805) watts, depending on model
- Because high voltage is present on the 70V and 100V speaker output terminals, always use the included terminal cover to prevent electric shock from accidental contact.

INTRODUCTION

Thank you for purchasing this 5-Channel 70V/100V Mixer Public Address Amplifier!

This amplifier features three microphone inputs and two auxiliary inputs, each of which is active and mixed into the line and speaker level outputs. When an EMC input trigger is detected, all outputs except MIC 1 are muted, allowing for the clear broadcast of important messages. The amplifier can drive a speaker array consisting of one or more speakers presenting a 4~16 ohm load or to one or more 70V or 100V speakers connected in parallel as part of a large public address system.

FEATURES

- 5-channel (3 microphone and 2 line) mixer/amplifier
- Amplifier rated for 60 (18803), 120 (14886), or 240 (18805) watts
- 70V, 100V, and low impedance 4~16 ohm speaker output options
- Built-in rack mount ears and 2U height for mounting in a standard 19" equipment rack
- Unbalanced front panel input for MIC 1
- Both balanced XLR and unbalanced TRS and RCA rear panel inputs for MIC 2 and MIC 3
- Phantom power option for MIC 2 and MIC 3
- Two unbalanced RCA auxiliary/line inputs
- One EMC priority input
- Master volume, bass, and treble controls
- Front panel level controls for all inputs
- 0-30dB variable muting for all channels except MIC 1 when MIC 1 is in use
- Built-in short circuit, over-current, and high temperature protection circuits
- Line level output of mixed signal for connection to other devices

PACKAGE CONTENTS

Please take an inventory of the package contents to ensure you have all the items listed below.

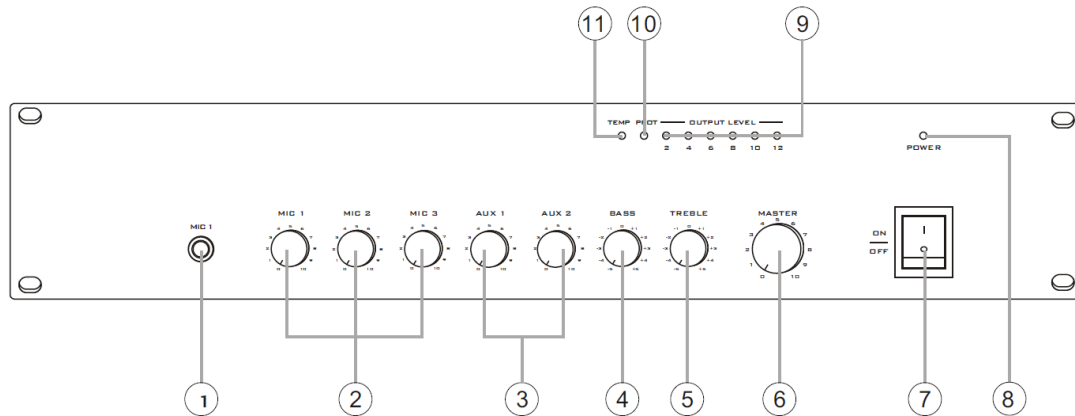
1x 5-channel 70V/100V mixer public address amplifier

1x AC power cable (NEMA 5-15 to IEC 60320 C13)

1x User's manual

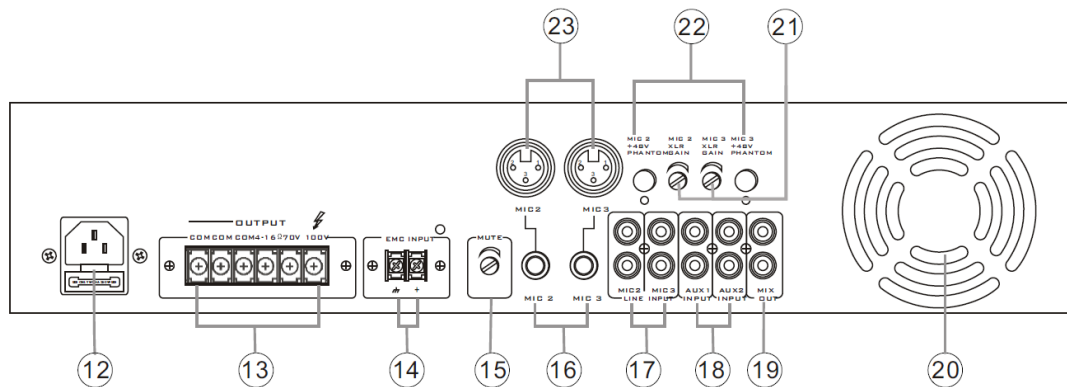
PRODUCT OVERVIEW

Front Panel



1. **MIC 1 Input:** Unbalanced stereo 1/4" (6.35mm) TRS microphone level input. This input is never muted and always broadcasts, even when the EMC trigger is detected.
2. **MIC 1 / MIC 2 / MIC 3 Knobs:** Mixing level controls for the three microphone inputs.
3. **AUX 1 / AUX 2 Knobs:** Mixing level controls for the two auxiliary inputs.
4. **BASS Knob:** Master bass level control.
5. **TREBLE Knob:** Master treble level control.
6. **MASTER Knob:** Master volume level control.
7. **ON / OFF Switch:** Power switch.
8. **POWER LED Indicator:** Power LED indicator illuminates when power is applied.
9. **OUTPUT LEVEL LED Indicators:** Output level meter.
10. **PROT LED Indicator:** If a short circuit, overload condition, or excessive temperature condition is detected, the output will be disconnected and the PROT LED will illuminate, indicating that the protection circuit is active. To reset the protection circuit turn the amplifier off, then back on.
11. **TEMP LED Indicator:** If excessive temperatures are detected, the TEMP LED will illuminate.

Rear Panel



12. **AC INPUT:** Grounded AC power input and fuse holder.
13. **OUTPUT:** Speaker output terminals for 70V, 100V, and low impedance 4~16 ohm speaker loads.
14. **EMC INPUT:** When a signal is detected on this input, all inputs except MIC 1 are muted, allowing for clear broadcast of important messages.
15. **MUTE:** This knob controls the amount of automatic volume reduction that is applied to all inputs except MIC 1 whenever a signal is detected on the MIC 1. Unlike the total muting when an EMC trigger is detected, this only reduces the volume of the other inputs, allowing you to talk over the other audio content. The amount of signal reduction is from 0dB to 30dB.
16. **MIC 2 / MIC 3:** Unbalanced stereo 1/4" TRS microphone inputs.
17. **MIC 2 / MIC 3 LINE INPUT:** Unbalanced stereo RCA microphone/line level inputs.
18. **AUX 1 INPUT / AUX 2 INPUT:** Stereo line level RCA auxiliary inputs.
19. **MIX OUT:** Stereo line level RCA output of the final mix.
20. **FAN:** The cooling fan automatically turns on when the temperature reaches +131°F (+55°C).
21. **MIC 2 XLR GAIN / MIC 3 XLR GAIN:** Use these knobs to control the amount of gain applied to each of the two XLR microphone inputs.
22. **MIC 2 +48V PHANTOM POWER / MIC 3 +48V PHANTOM POWER:** Depress these buttons to apply +48V phantom power to the respective XLR microphone input.
23. **MIC 2 / MIC 3:** Balanced mono XLR microphone inputs.

CONSTANT VOLTAGE VS LOW IMPEDANCE SPEAKER SYSTEMS

A constant voltage speaker system differs from a traditional low impedance (e.g., 8-ohm) speaker system in that it uses a step-up transformer at the audio source to raise the voltage and lower the current on the transmission line. At the speaker end, a step-down transformer converts the signal back to a normal speaker level voltage. This reduces power loss during transmission, which allows for the use of longer speaker wire runs using smaller gauge wire.

Additionally, a constant voltage speaker system allows for the use of multiple speakers on each channel, without the need for complicated impedance calculations and configurations. In a constant voltage system, all speakers on a given channel are connected in parallel and the complicated impedance calculations are replaced by simple wattage calculations.

For example, if you want to connect two speakers per channel in a traditional 8-ohm speaker system, you must either connect them in series, which results in an overall 16-ohm impedance, or in parallel, which results in an overall 4-ohm impedance. In the first case, the 16-ohms impedance effectively halves the output power of your amplifier, resulting in lower overall volume levels. In the latter case, the 4-ohms impedance means that your amplifier will have to work harder and must be rated as stable at 4 ohms. Adding a third speaker to the mix would complicate it further, producing either a 24-ohm or 2.67-ohm overall impedance. Note that very few amplifiers are stable under 2-ohm loads, so that is usually not an option.

On the other hand, with a constant voltage system, you consider first the RMS output wattage of the amplifier. This should be reduced by 20% to compensate for insertion loss. Each individual speaker on a given channel is set to a value such that the total does not exceed the rated power, less 20%. You do not need to worry about making the total as close as possible to the limit; just ensure that the total does not exceed the limit. For example, with the 120-watt model, the total load from speakers should not exceed 96 watts.

If all speakers are set to the same wattage value, they will all have the same volume level. If one speaker is set to a higher wattage value, it will be louder than the others, while a speaker set to a smaller value will be quieter than the others. This allows you to compensate for the environment in which the speaker is placed. For example, a speaker placed outside would need to be louder than a speaker placed in a small room.

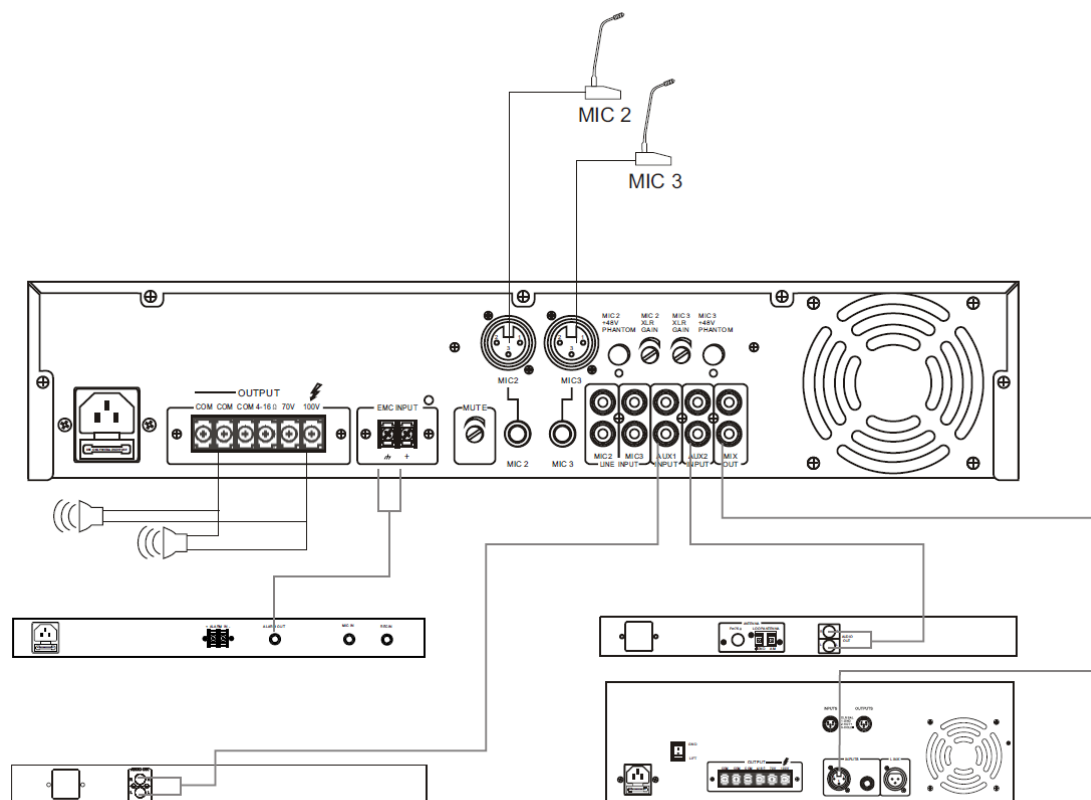
WIRE PREPARATION

Regardless of which type of speaker array this amp will drive, you will need to use speaker wire (not included) to connect the amp to the speaker array.

To prepare a length of speaker wire for connection, perform the following steps:

1. Use a wire stripper (not included) to remove about 3/8" (9.5mm) of insulation from both conductors on one end of the wire.
2. Twist the exposed wire strands to ensure that the exposed section of wire remains in a bundle.
3. Repeat steps 1-2 for the other end of the speaker wire.

INSTALLATION AND SETUP



Perform the following steps to install and setup this amplifier. The following instructions will assume connection of a CD player, an FM tuner, and three microphones. Note that each input connection, except MIC 1, is optional.

1. Power off and unplug all equipment that will be connected to this amplifier.
2. Using a stereo RCA cable (not included), plug one end into the **AUX 1** input on the amplifier, then plug the other end into the stereo output of your CD player.
3. Using a stereo RCA cable (not included), plug one end into the **AUX 2** input on the amplifier, then plug the other end into the stereo output of your FM tuner.
4. Plug a microphone (not included) into the **MIC 1** input on the amplifier.

Note that this must be either a dynamic microphone or a condenser microphone with its own power source. For best results, use a microphone with a power switch.

5. Plug a microphone (not included) into one of the **MIC 2** inputs on the amplifier.
6. Plug a microphone (not included) into one of the **MIC 3** inputs on the amplifier.

7. Unless you are using a condenser microphone for MIC 2 or MIC 3, ensure that the MIC 2 and MIC 3 **+48V PHANTOM POWER** switches are not depressed. If either microphone is a condenser type, depress the appropriate PHANTOM POWER switch.

Warning! Applying phantom power to a non-condenser microphone can damage or destroy the mic.

8. Connect the output of your alarm trigger source to the **EMC INPUT** terminals on the amplifier.
9. Connect a two-conductor speaker wire (not included) to the input terminals of your speaker array.

Note: The speaker array can be one or more low impedance speakers connected in such a way as to present a load between 4 and 16 ohms to the amplifier. Alternatively, the array can be one or more 70V or 100V constant voltage speakers connected in parallel with a total wattage rating of 48 (18803), 96 (14886), or 192 (18805) watts or less.

10. Connect the negative speaker wire lead to the **COM** terminal on the amplifier.
11. If using a low impedance speaker array, connect the positive speaker wire lead to the **4-16Ω** terminal on the amplifier. If using a 70V constant voltage speaker array, connect the positive speaker wire lead to the **70V** terminal on the amplifier. If using a 100V constant voltage speaker array, connect the positive speaker wire lead to the **100V** terminal on the amplifier. Use only one of these options.
12. Flip the terminal cover back over the speaker output terminals to protect from electric shock due to accidental contact.
13. (Optional) If you want to send the mixed signal to another amplifier or other device, plug one end of a stereo RCA cable (not included) into the stereo input on your other device, then plug the other end into the **MIX OUT** RCA jacks on the amplifier.
14. Ensure that the ON / OFF power switch on the front panel is in the OFF position.
15. Plug the included AC power cable into the C14 AC INPUT on the amplifier, then plug the other end into a nearby AC power outlet.

16. Plug in and power on all connected equipment. Start audio playback on the CD player and FM tuner.
17. Ensure that the three **MIC**, the two **AUX**, and the **MASTER** knobs on the front panel are fully counterclockwise. Ensure that the **BASS** and **TREBLE** knobs are set to the mid-point, with the tick in the 12 o'clock position.
18. Flip the ON / OFF power switch on the amplifier to the **ON** position.
19. Slowly rotate the **MASTER** knob clockwise until the tick is in the 9 o'clock position.
20. Slowly rotate the **AUX 1** knob clockwise until audio material can be heard.
21. Adjust the positions of the **AUX 1** and **MASTER** knobs until the volume is at the desired level. This should be done in such a way that neither knob is near the minimum or maximum part of its range, allowing for further adjustments to increase or decrease the volume level from this audio source.
22. Rotate the **AUX 2** knob clockwise until the volume level from the FM tuner is at the desired level. In most cases this will be such that the volume levels from the CD player and FM tuner are identical.
23. Turn on MIC 2. While speaking into the microphone, rotate the **MIC 2** knob clockwise until the volume is at the desired level.
*Note: Depending on the microphone type and its output level, you may need to adjust the **MIC 2 GAIN** control on the rear panel.*
24. Turn on MIC 3. While speaking into the microphone, rotate the **MIC 3** knob clockwise until the volume is at the desired level.
*Note: Depending on the microphone type and its output level, you may need to adjust the **MIC 3 GAIN** control on the rear panel.*
25. Turn off MIC 2 and MIC 3 and stop audio playback from the CD player and FM tuner, so that no audio is present.
26. Turn on MIC 1. While speaking into the microphone, turn the MIC 1 knob clockwise until your voice is at the desired level. Turn off MIC 1.
27. Restart audio playback from the CD player or FM tuner.
28. Turn on MIC 1. While speaking into the microphone slowly adjust the **MUTE** control on the rear panel until the audio content is at a volume level such that it

can still be heard, but is low enough that the speech on MIC 1 can be clearly heard over the audio content.

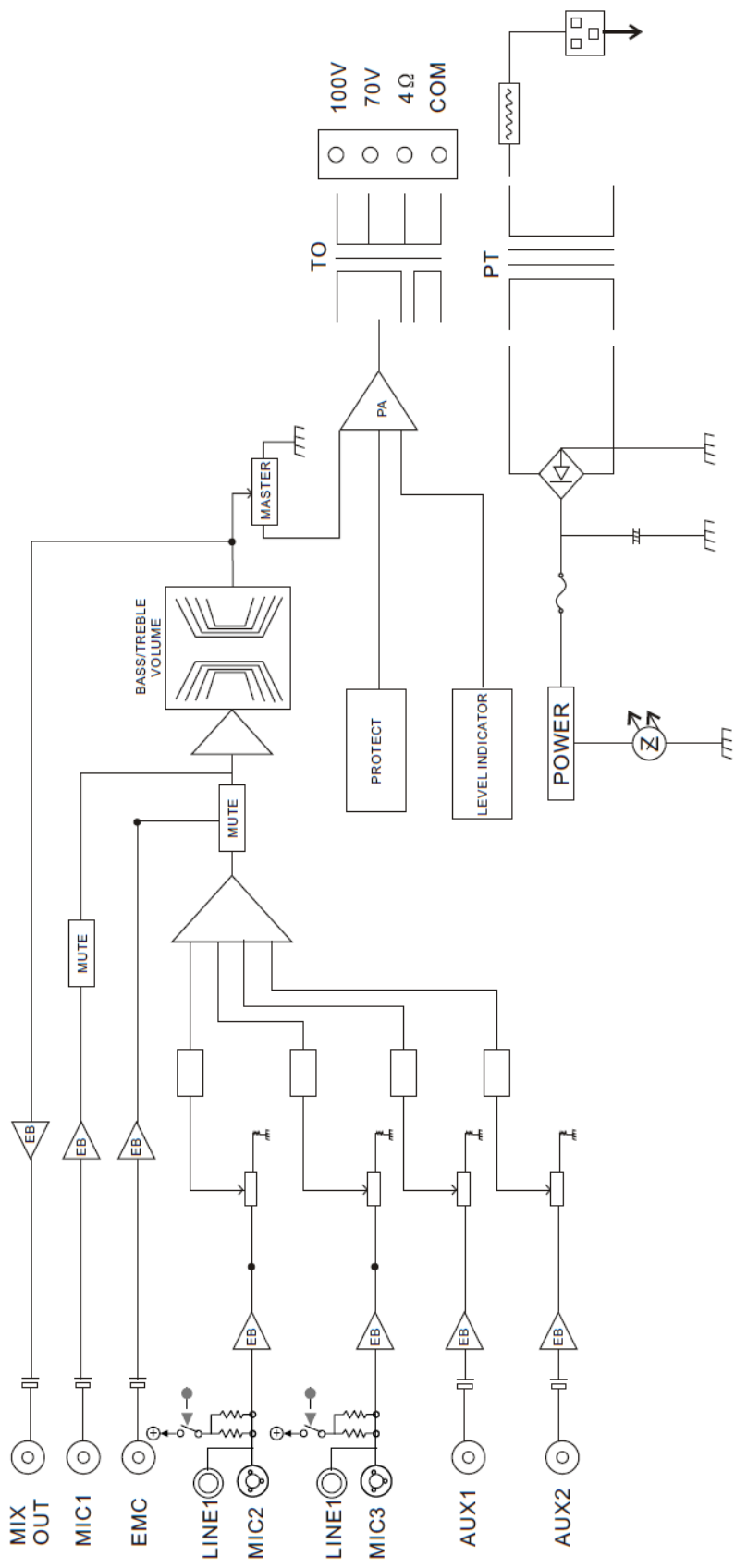
29. Trigger your alarm source so that a trigger signal is present on the EMC input terminals. Verify that the audio from MIC 2, MIC 3, the CD player, and the FM tuner are all completely muted. Verify that voice on MIC 1 can be clearly heard.
30. Check the device that is connected to the MIX OUT to verify that it is receiving the audio mix.

Congratulations, your PA system is setup and configured and is ready for use!

INSTALLATION NOTES

- If using a 70V or 100V constant voltage speaker array, ensure that the total wattage does not exceed 80% of the amplifier's RMS capacity, i.e., 48 (18803), 96 (14886), or 192 (18805) watts.
- For best results, **MIC 1** should have a power switch so that it can be turned off to prevent accidental broadcast.
- You can connect line level devices, such as CD players, DVD players, etc., instead of microphones, to the **MIC 2 LINE** and **MIC 3 LINE** RCA inputs. You may need to adjust the individual **MIC GAIN** control to get the desired audio output level.

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

Model	18803	14886	18805
Rated Output Power	60 watts	120 watts	240 watts
Speaker Outputs	Low impedance (4~16 ohms), Constant voltage (70V or 100V)		
Inputs	MIC 1: unbalanced 1/4" TRS, 5mV, 600 ohms MIC 2-3: Unbalanced TRS, balanced XLR, 5mV, 600 ohms MIC 2-3 LINE: Unbalanced stereo RCA, 775mV, 10 kilohms AUX 1-2: Unbalanced RCA, 350mV, 10 kilohms EMC: Unbalanced EMC, 775mV, 10 kilohms		
Bass Adjustment	±10dB at 100Hz		
Treble Adjustment	±10dB at 10kHz		
Frequency Response	50Hz ~ 16kHz		
Signal-to-Noise Ratio	MIC 1-3: 66dB AUX 1-2: 80dB		
THD	< 0.5% at 1kHz, 1/3 rated power		
Crosstalk	≤ 50dB		
Muting Function	Automatic 0-30dB reduction on all inputs except MIC 1 when MIC 1 is active		
Protection	Short circuit, over-current, overheating		
Input Power	100~120 VAC, 50/60Hz		
Power Consumption	100 watts	200 watts	400 watts
Dimensions	19.1" x 13.2" x 3.5"(484 x 335 x 88 mm)		
Weight	15.7 lbs. (7.1 kg)	20.5 lbs. (9.3 kg)	36.6 lbs. (16.6 kg)

REGULATORY COMPLIANCE

Notice for FCC



This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice for Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.