

PeopleLINK®

Mixer / Power Amplifier

OPERATIONS MANUAL

Gentner

Gentner Teleconferencing Systems
1825 Research Way
Salt Lake City, Utah 84119

Mixer / Power Amplifier Operations Manual

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Introduction

Thank you for purchasing the Gentner PeopleLink Mixer/Power Amplifier (MPA)! To receive the full benefit of the MPA, we recommend that you read this manual in its entirety before beginning your installation.

There are a number of factors that affect the sound of your audio conference. The purpose of this manual is not only to help you setup and operate the MPA, but also to maximize the effectiveness of your entire audio conference.

We welcome and encourage your comments so that we can improve this product. Please call or write us at the location noted below.

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Features and Benefits

- Combined Six Channel Microphone Mixer and 2x15 Watt Power Amplifier
- Six Factory Preset Programs to Choose From
- RS-232 Serial Data Port with Supplied Software for Custom Programming
- Locking Front Panel
- Easy to Understand Level Adjustments
- Expandable for Additional Microphones
- Standard Plug-in Connectors for Easy Installation
- Compatible with Most Microphones, Speakers, and other Peripheral Equipment

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Conference Room Planning

Before installing your MPA, we recommend that you carefully plan your conferencing installation to ensure that you achieve the best possible results. Having a basic understanding of room acoustics and conference room design will not only help you install and operate your MPA, but will assist you in the installation and operation of other equipment used in your audio conference.

Acoustics Just as humans have unique personalities, conference rooms have unique acoustic environments. Each room has a different acoustic make-up. The acoustic make-up of the room determines how sound travels within the room. Wall fabrics, windows or hard surfaces, room size, people walking or other movements, and the audio equipment used, are all factors that have an impact on the acoustic conditions in the room.

Directly related to the room's acoustic make-up are several problems which are common to all teleconferencing situations. The objective is to minimize the impact that each of the following conditions has on your audio conference.

Reverberation

Reverberation is the persistence of sound due to repeated reflections from walls, ceiling, floor, furniture, and occupants in a room. Reverberation dissipates over a fixed period of time depending on the room's environment.

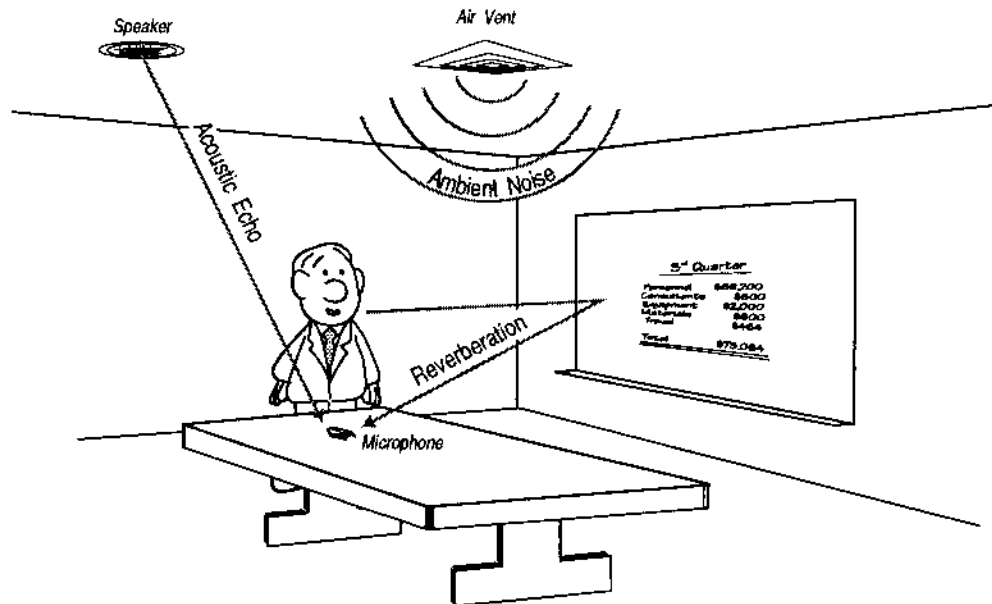
Acoustic echo

Acoustic echo is the sudden return of sound rather than a smooth decay and is caused primarily by a delay in the network or environment. It occurs either after or before a signal leaves a speaker and enters a microphone for the return transmission, entering the originating site later. In other words, the remote location hears their own voice echoed back to them through the speakers and microphones at the opposite location.

Although acoustic room treatment helps reduce acoustic echo, it will not completely eliminate it. The PeopleLink Acoustic Telephone Interface (ATI) is designed to electronically eliminate all residues of acoustic echo at its source. Contact Gentner or your dealer for more information on the ATI.

Ambient noise

Ambient noise is also referred to as room noise. It is the unwanted background noise picked up by the conference room microphones. Air conditioning fans, heating fans, and noises created outside of the room but still audible inside of the room, are all examples of ambient noise.



Acoustic Room Treatment

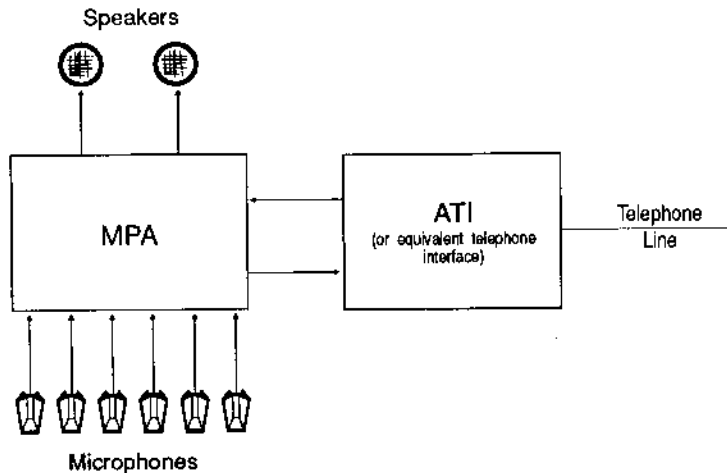
In order to maximize the sound quality of your audio conference it is important to give some attention to acoustic room treatment. Although you do not need to worry about spending a large amount of time and money on optimizing your room's acoustic environment, we recommend that you take the following suggestions into consideration.

1. Install acoustic panels in the room. There are a variety of sizes, shapes, and colors available. Contact your dealer or Gentner Teleconferencing for more information.
2. Install as much sound absorbing material as needed. Items such as drapes, wall fabrics, and carpet, can help reduce reflected audio in the room.

You may also decide to contact an acoustic consultant or your contractor to advise you on the best treatment for your room.

**Conference Room
Layout**

The drawing below shows a block diagram of a basic audio conferencing installation using the MPA. The MPA mixes microphone audio and directs it to a transmission medium, typically a telephone interface and echo canceller, where it is ultimately delivered to the remote conference room. At the remote conference room, audio is routed to the MPA where it is amplified and sent to the speaker(s). When using the Acoustic Telephone Interface (ATI), a remote control is provided to connect the conference call, adjust speaker volume, and mute outgoing audio to the remote site. A standard telephone set is used to place calls to the remote conference room.



Microphone Selection

The type of microphone you select can have a dramatic impact on the sound quality of your conference. In particular, the type of microphone used affects the voice pick up pattern, audio level, and amount of noise introduced into the entire system. Typically, for teleconferencing applications a uni-directional microphone with a cardioid pattern is the preferred choice. Its design allows for maximum pick up from the front of the microphone and minimum pick up from the rear. Cardioid microphones are available in several styles including table top, podium, and lavalier.

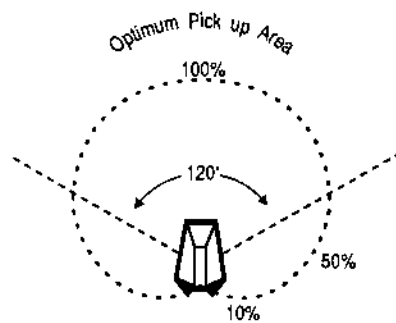
Table top (boundary) microphones are designed for large, flat surfaces other than the ceiling. They are most commonly placed on the center of the table, facing outward.

Podium (gooseneck) microphones are typically used in a lectern application. They are gaining acceptance in some ceiling type applications and are sometimes used on conference room tables as well.

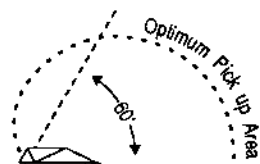
Lavalier microphones are used when mobility of the speaker is a major concern. They are inconspicuous and can be adapted to a wireless configuration.

Microphone Placement One of the most effective ways to minimize the problems encountered with audio conferencing is to position the speakers and microphones so that you achieve the maximum amount of acoustic isolation (isolation between speaker audio and microphone audio). This can be accomplished using uni-directional microphones and placing the speaker out of the optimum pick up area (see diagram below).

Uni-Directional Microphone

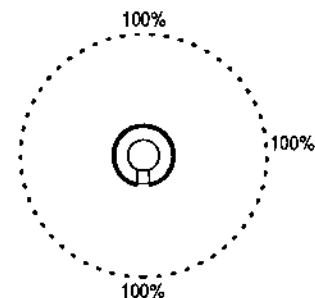


Top view pick up pattern
(standard cardioid pattern)

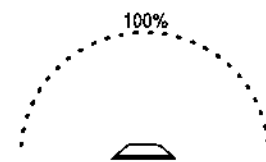


Side view pick up pattern
(standard cardioid pattern)
when placed on a boundary
(i.e. a table)

Omnidirectional Microphone



Top view pick up pattern



Side view pick up pattern
when placed on a boundary
(i.e. a table)

Understanding Microphone Mixers

Microphone mixers can be classified into three basic types: Non-gating, gating, and automatic. The MPA is an automatic microphone mixer. Each of these three types is explained below.

Non-Gating Microphone Mixers

Non-gating microphone mixers are the simplest of the three types of mixers. All mixing levels are manually set and all microphones stay on at all times. Mixing levels do not automatically adjust to compensate for low audio levels. Once mixing levels are adjusted, they remain the same until someone physically changes them. Since there is no change in mixing levels, a non-gating mixer will allow the microphones to pick up all room sound.

Non-gating microphone mixers work best in rooms that are acoustically treated. When the conference room is acoustically treated, ambient noise and reverberation are reduced enough to minimize the impact of the overall sound quality of the conference. When all microphones are left on, they are extremely sensitive to all sounds in the room. Using a non-gating microphone mixer also helps stabilize the overall audio in the system because audio is not being turned on and off as in a gating mixer. If the environment is treated to eliminate reverberation and ambient noise, a non-gating mixer can provide you with the most natural sounding audio.

Gating Microphone Mixers

Gating microphone mixers have the ability to turn off microphones when audio is not present. This is helpful to cut down on the amount of ambient and reverberant noise in the room since only those microphones that are being spoken into will be turned on.

When all microphones are turned on in a highly reverberant room, a hollow or muddy sound may occur. When using a gating microphone mixer, microphones gate on (turn on) only when sound is present in the pick up pattern. This reduces the amount of unwanted ambient noise in the conference. However, gating mixers do not automatically adjust mixing levels.

Automatic Microphone Mixers

Automatic microphone mixers are the most advanced type of mixers. They are especially well suited at overcoming excessive room noise, reverberation, and other problems associated with multi-microphone installations. The gain, or mixing level, of each microphone is automatically adjusted based on audio levels. Automatic mixers monitor the audio levels at each microphone and reduce the mixing level for microphones not in use. By lowering the level of the microphones not in use, ambient room noise, reverberation level, and total system gain are reduced. This improves the audio quality for the listener and decreases the possibility of feedback.

Automatic microphone mixers operate on two basic principles. First, the mixer turns on and off microphones when the sound within a microphone's acceptance pattern reaches a certain level. Second, the mixer makes decisions for each microphone individually, based on each microphone's unique conditions.

Each microphone operates using the same set of global parameters, as programmed by the user. However, each microphone behaves independently according to its own surroundings. Each microphone observes its own ambient surroundings and makes decisions based on the individual environment. Thus, a microphone located in a highly reverberant area of the conference room is able to compensate for the changes in its own environment.

In order to gain a better understanding of the MPA and how it operates, you should be familiar with several terms associated with automatic microphone mixers:

Adaptive Ambient: This portion of the mixer monitors the varying level of ambient noise in the room and changes the threshold level at which a microphone turns on. People generally talk at levels slightly higher than the surrounding ambient noise. As the ambient noise level changes, so does the level of the voice. The adaptive ambient feature compensates for these changes to prevent microphones from turning on due to ambient noise.

Off Attenuation: This is the amount of gain (level) reduction a microphone is given when the microphone is not turned on.

Attack Time: This is the amount of time it takes for a microphone to completely turn on after voice (input) is recognized.

Attenuate: To reduce the level of a signal.

Constant Gain: This portion of the mixer corrects for increases in output level due to multiple microphones turning on. Constant gain will reduce the overall level at the output of the mixer according to the number of microphones on. This helps to reduce "pumping" of the noise floor when multiple people are speaking and minimizes the chance of going into feedback because of the increased gain of having more than one microphone on.

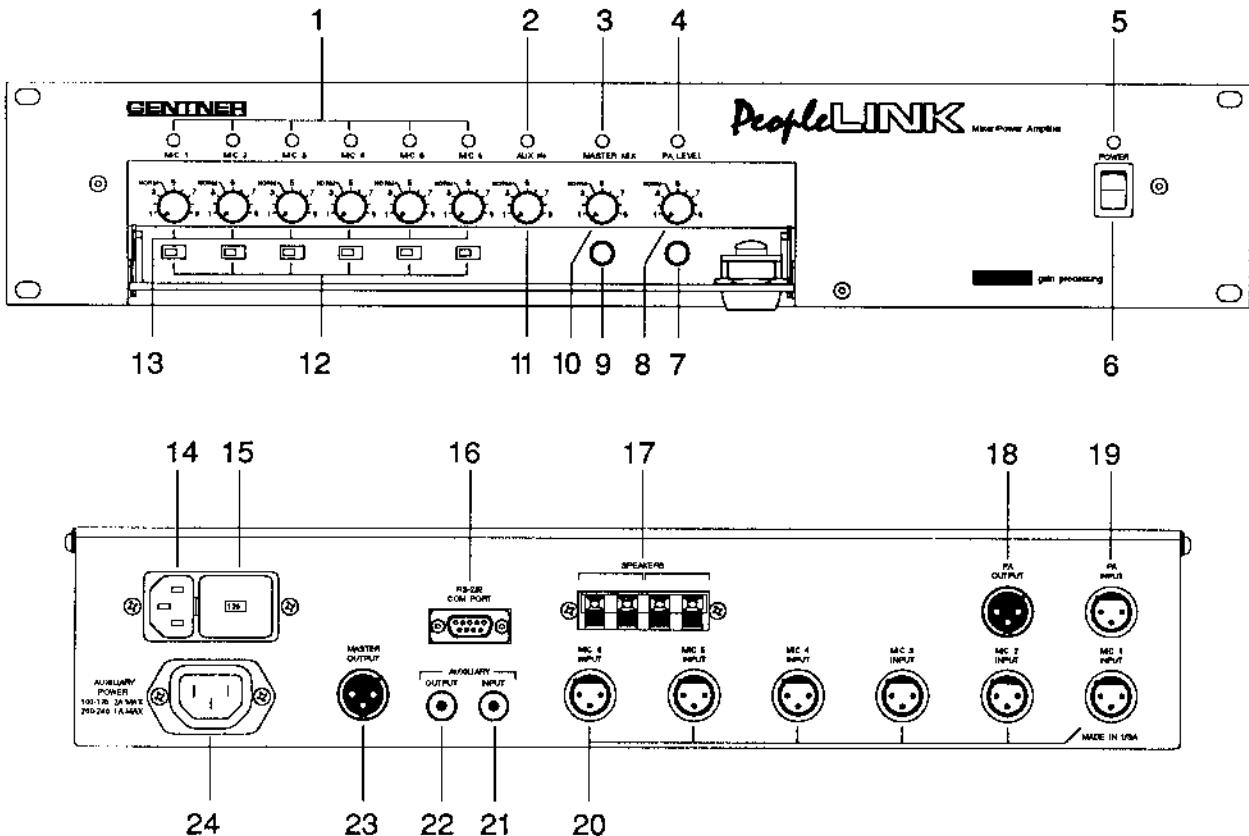
Decay Time: This time determines how fast the microphones are reduced to the off attenuation level from the on level.

Filibuster: This limits the number of microphones allowed to be on simultaneously. This helps to reduce confusion when several people are speaking at the same time.

Gating Threshold: This is the voice (input) level that must be reached before a microphone will turn on.

Hold Time: This is the length of time that a microphone remains on after the voice (input) level drops below the gating threshold. This prevents the microphone from turning off with brief pauses during speech.

Controls, Connectors and Indicators



- 1. MIC 1 thru 6 Channel Gating Indicators**
 These LEDs light green when the corresponding microphone turns on. They do not indicate signal level.
- 2. AUX Input Audio Indicator**
 This LED lights green to indicate audio presence on the auxiliary channel. It does not indicate signal level.
- 3. MASTER MIX Level Indicator**
 Displays the level of audio being sent out the MASTER OUTPUT. The LED lights green with normal audio presence and lights red to indicate audio peaks.
- 4. PA LEVEL Indicator**
 Displays the level of audio being received from the PA INPUT. The LED lights green with normal audio presence and lights red to indicate audio peaks.

- 5. POWER Indicator**
Lights green when power is being received by the MPA and the POWER Switch is on.
- 6. POWER Switch**
Use this switch to turn on (off) the MPA and any equipment connected to the auxiliary power connector, such as Gentner's Acoustic Telephone Interface (ATI).
- 7. PROGRAM Selection**
Push to select which of the 12 programs you want to operate in. The MIC channel gating indicators and the PA LEVEL indicator display which program the MPA is currently running. When the PA LEVEL indicator is green, the six factory default programs are shown on the six channel gating indicators. When the PA level indicator is red, the six user programmable programs are shown. Hold down the PROGRAM Enable button to use program selection.
- 8. PA LEVEL Control**
This control is used to adjust the audio level to the speakers.
- 9. PROGRAM Enable**
HOLD DOWN to use program selection. When this button is pressed, MIC channel gating indicators momentarily light one at a time to indicate the MPA is ready to accept a new program.
- 10. MASTER MIX Level Control**
This control is used to adjust the audio level of the MASTER OUTPUT.
- 11. AUX Input Level Control**
This control is used to adjust the audio level received through the AUXILIARY INPUT connector.
- 12. MIC 1 thru 6 Channel Auto Mix Switches**
These switches enable and disable auto mixing on each microphone channel.
- 13. MIC 1 thru 6 Channel Level Controls**
These controls adjust the audio level received by each microphone.
- 14. AC Power Cord Connector**
Connect a power cord between this connector and the line voltage source.
- 15. Line Voltage Select**
Select the line voltage input as 100V, 120V, 220V, 240V.
- 16. RS-232 COM PORT**
Connect this port to a computer or other programming device.
- 17. Speaker Jacks**
Connect speakers here.

18. PA OUTPUT Connector

Connect to the PA input of another MPA for expansion, or to the input of a distribution system. The audio fed to the PA INPUT is buffered and sent to this output.

19. PA INPUT Connector

Connect to the output of the ATI or compatible telephone interface, video CODEC, or other equipment, to send audio to the power amplifier.

20. MIC INPUT 1 thru 6 Connectors

Connect microphones here. Each input corresponds to the microphone channel indicators and adjustments on the front panel.

21. AUXILIARY INPUT Connector

Connect this input to the Auxiliary output of another MPA for expansion, or to input audio from a tape player or other audio source. This audio is combined with the audio from the six microphones.

22. AUXILIARY OUTPUT Connector

Use this connector to connect to the auxiliary input of another MPA when adding additional microphones, or to a tape recorder to record the audio on all microphones.

23. MASTER OUTPUT Connector

This is the combined output of all microphones. Connect this output to the TRANSMIT INPUT of the ATI or compatible telephone interface, video CODEC, or other equipment.

24. AUXILIARY POWER Cord Connector

This power outlet will switch off when the power switch is turned off. When using the PeopleLink ATI, connect a power cord between this connector and the ATI AC Power Cord Connector.

Operating Requirements

Electrical Requirements Your MPA was shipped to you ready to use with a 120 VAC 50/60 Hz power source. To change the AC Line Voltage input to accept a different power input, follow the procedure below.

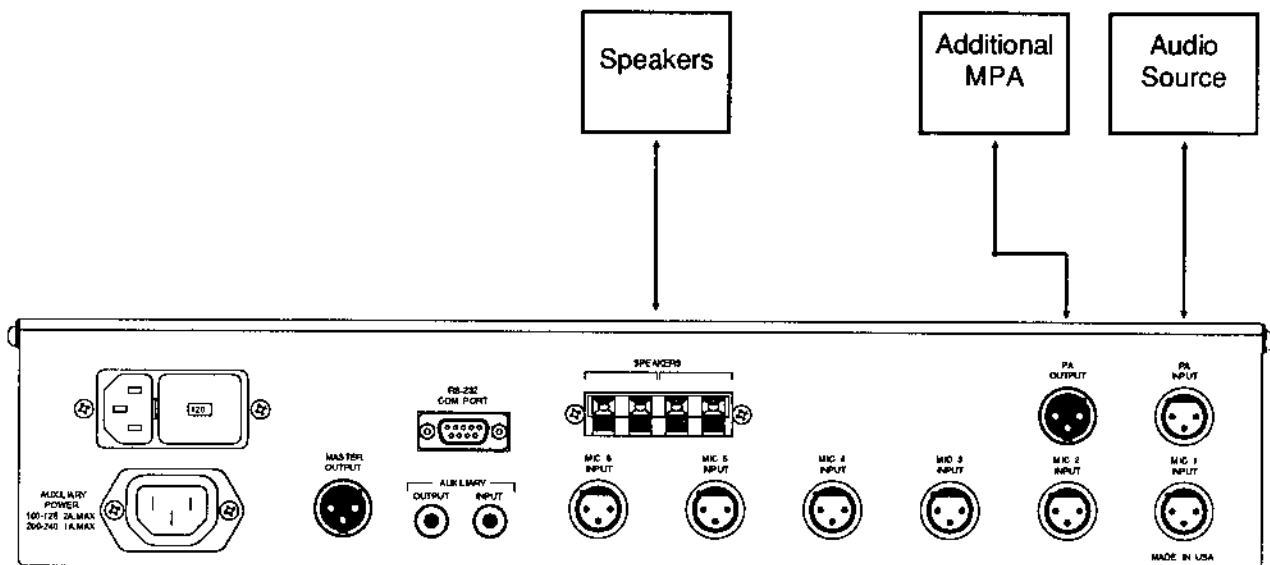
- DISCONNECT THE MPA FROM AC POWER. Unplug the electrical power cable from the rear panel.
- Using a small screw-driver, remove the cover from the line-voltage module.
- Using long-nosed pliers, remove the white jumper board.
- Rotate the jumper board to the desired voltage. The four possible voltages are: 100,120, 220, and 240.
- Re-insert the jumper board with the desired voltage facing out.
- Replace both fuses with the proper value as indicated below:
100-120 VAC: Upper fuse – 3/4 amp Slo-Blo, Lower fuse – 2 amp Slo-Blo.
220-240 VAC: Upper fuse – 3/8 amp Slo-Blo, Lower fuse – 1 amp Slo-Blo.
- Replace the cover and verify that the correct voltage is displayed through the cover's window.

Environment Requirements Mount your MPA in a 19" equipment rack. Be careful not to block any of the ventilation holes. Gentner recommends an operating environment between 32 and 110 degrees Fahrenheit.

Remember, you may need to remove the cover of the MPA to set the baud rate of the RS-232 COM PORT and to set the phantom power for the microphones.

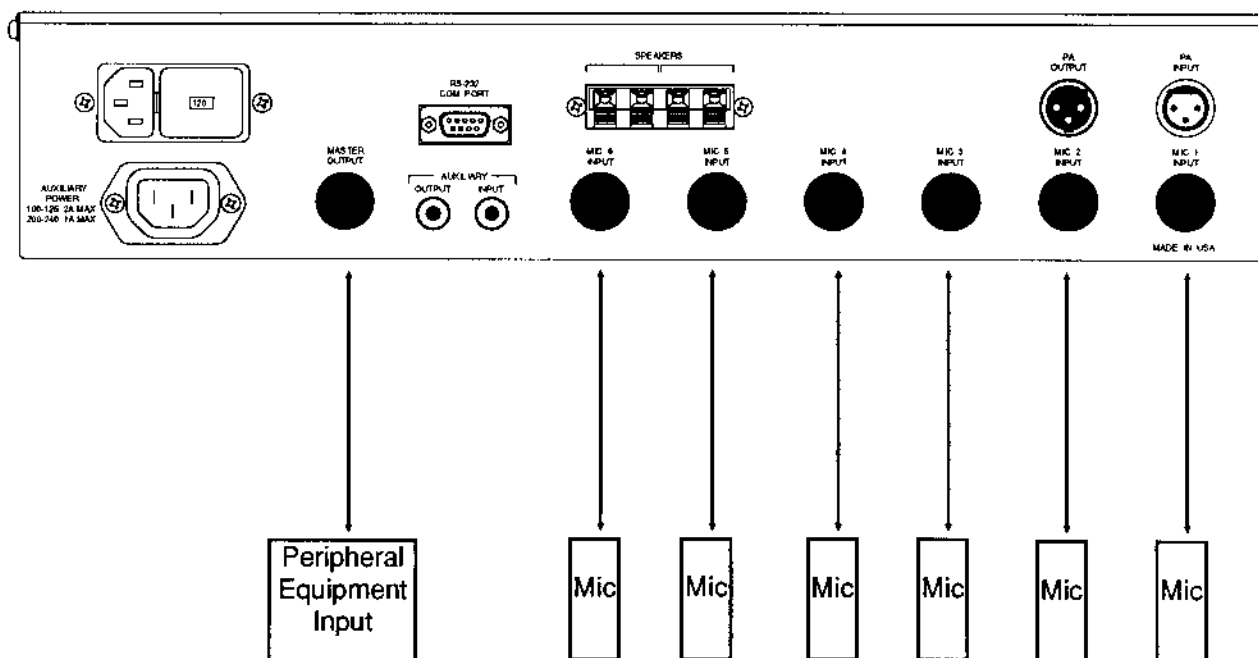
Installation

- PA Connections**
- Connect speaker wire between the speaker connectors of the MPA and the speakers.
 - Connect PA OUTPUT of the MPA to PA INPUT of an additional MPA.
 - Connect the output of the audio source to PA INPUT of the MPA.



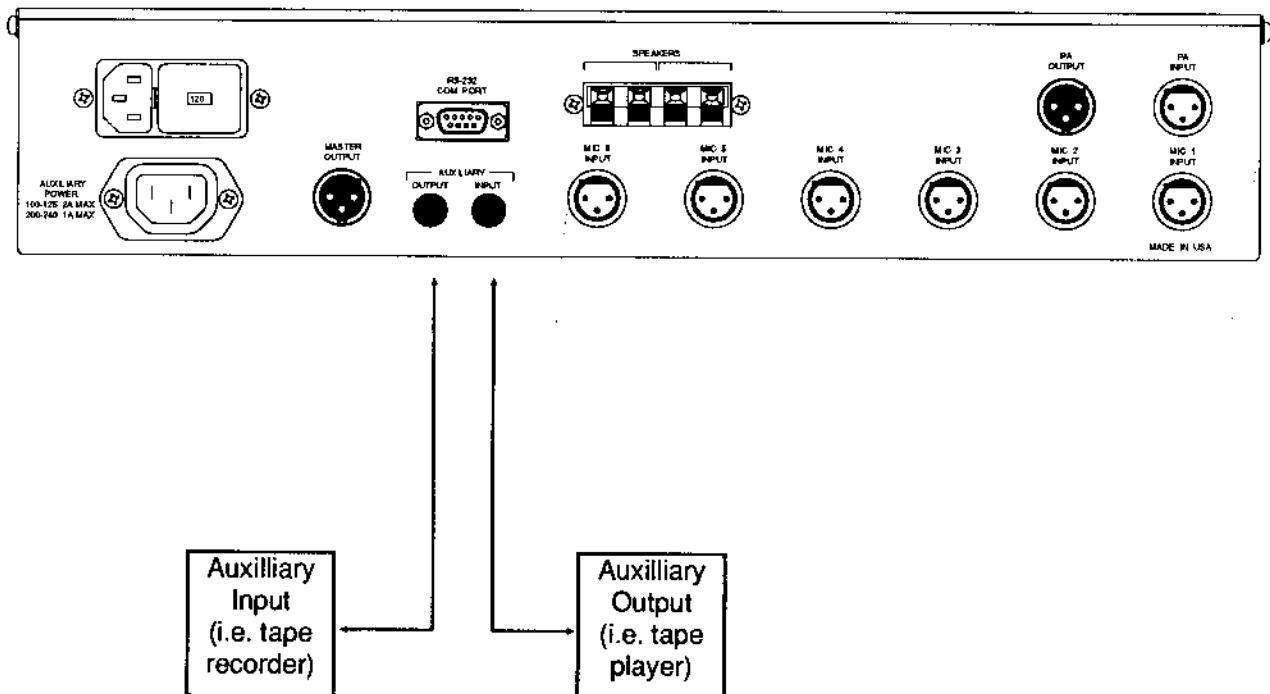
Microphone Mixer Connections

- Connect MASTER OUTPUT of the MPA to the input of the peripheral equipment.
- Connect MIC 1 INPUT through MIC 6 INPUT of the MPA to microphones.



Auxiliary Equipment Connections

- Connect AUXILIARY OUTPUT of the MPA to the input of your auxiliary equipment.
- Connect the output of your auxiliary equipment to AUXILIARY INPUT of the MPA.



Computer Connections Connect RS-232 COM PORT of the MPA to COM1 of an IBM compatible computer. RS-232 cables are available at your local computer store or one can be made using the wiring diagram below.

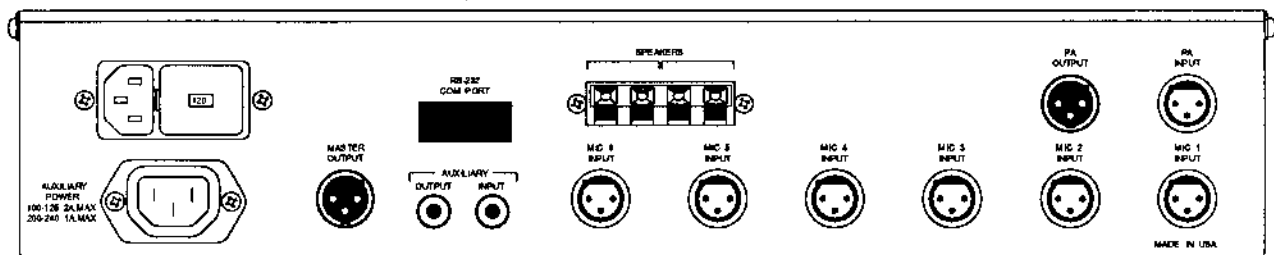
Note: The baud rate of the MPA is shipped from the factory set at 9600 baud. This is the correct setting for most applications. However, if your application requires a different baud rate, refer to "Baud Rate" on page 18 to change this setting.

RS-232 Cable Wiring Diagrams

MPA DB9 Male	Computer DB9 Female
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

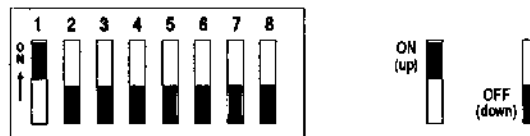
MPA DB9 Male	Computer DB25 Female
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

IBM
Compatible
PC



Phantom Power The MPA comes from the factory with phantom power enabled. If the MPA is used with Gentner microphones, the phantom power should be left enabled. If you are using microphones that do not require phantom power, follow the steps below.

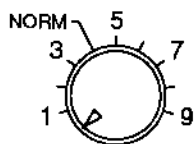
- DISCONNECT THE MPA FROM AC POWER. Unplug the electrical power cable from the rear panel.
- Remove the lid of the MPA by loosening the four side screws.
- Locate SW1, an eight position dipswitch, on the bottom board near the power module.
- For the microphones that require phantom power, set the corresponding dip switch to ON (switch 7 and 8 are not used).
- Replace the lid and tighten the four screws.



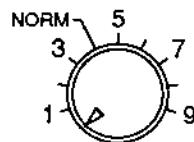
*In this diagram, MIC 1 is configured for phantom power and MIC 2 through MIC 6 are not configured for phantom power.
(switch 7 and 8 are not used)*

Note: Providing phantom power to microphones that do not require it (i.e. dynamic microphones) will not affect the microphone's sound quality in most cases. Please check with your microphone manufacturer or dealer to be sure.

- Auto Mix Switches**
- To place an individual microphone in Auto Mix mode, slide the corresponding Auto Mix switch to the right.
 - To turn off automatic mixing for an individual microphone, slide the corresponding Auto Mix switch to the left.



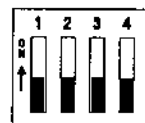
This Auto Mix switch is set to the left causing the microphone to be continually on.



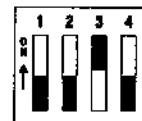
This Auto Mix switch is set to the right causing the microphone to be automatically mixed.

Baud Rate The MPA is shipped from the factory set at a baud rate of 9600. If you are using the supplied setup software with a PC, you should keep the baud rate at 9600. If, however, you need to change the baud rate to work with another type of system, follow the steps below.

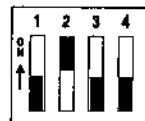
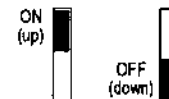
- DISCONNECT THE MPA FROM AC POWER. Unplug the electrical power cable from the rear panel.
- Remove the lid of the MPA by loosening the four side screws.
- Locate SW1, a four position dipswitch, on the top board near the power entry module.
- Set the dipswitch to the desired baud rate.
- Replace the lid and tighten the four screws.



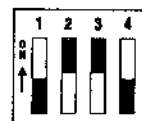
9600 Baud



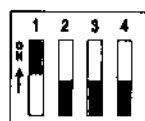
4800 Baud



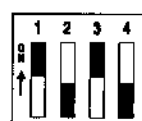
2400 Baud



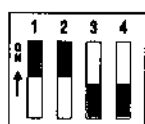
1200 Baud



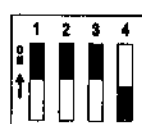
600 Baud



300 Baud

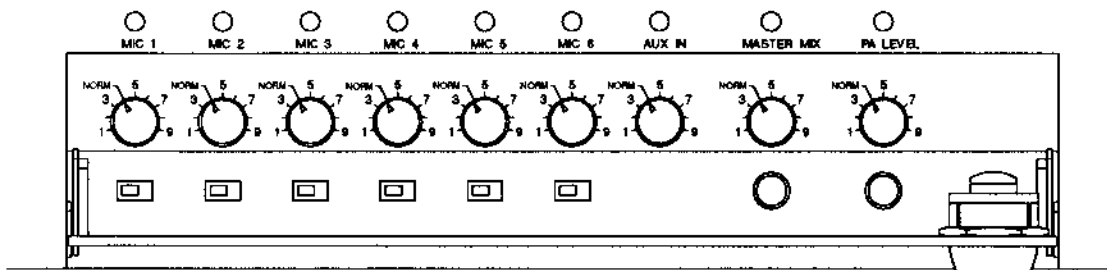


150 Baud



75 Baud

- Setting the Levels**
- Put the MASTER MIX control in the NORM position and adjust the controls for MIC 1 through MIC 6 so that during normal speech, at each microphone, the MASTER MIX LED flashes green. Remember, if more overall gain is needed in the microphones, it is better to increase the levels of MIC 1 through MIC 6 and keep the MASTER MIX level near the NORM position. In other words, it is better to get gain in the individual microphone levels rather than the master level. Also remember, the MIC 1 through MIC 6 Gating Indicators do not indicate audio level, but whether or not the microphone is gated on or not.
 - Adjust the AUX IN control so that the MASTER MIX LED flashes green. Remember that the AUX Input LED does not indicate audio level, but the presence of audio only.
 - Adjust the level of the external audio source feeding the power amp so that the PA LEVEL LED flashes green. The LED may occasionally flash red on peaks.
 - Adjust the PA LEVEL control for a comfortable listening level. Remember, the PA LEVEL LED indicates the level of audio being received from the external audio source and does not indicate the level you set with the PA LEVEL control.



Choosing a Program

Factory Default Programs

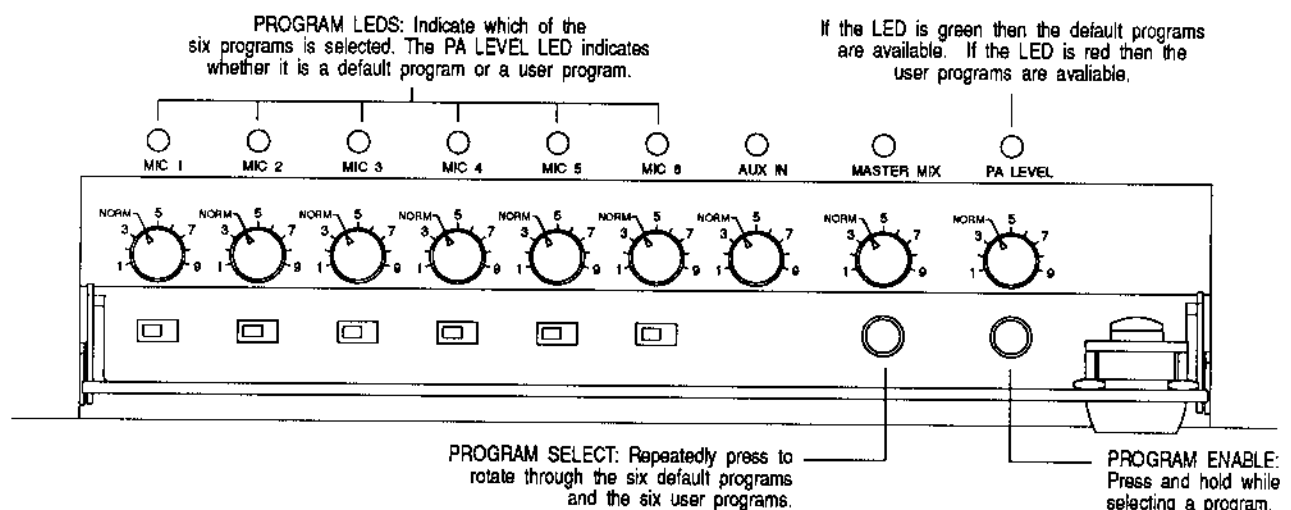
The MPA is shipped with six factory programs designed for the most common conferencing applications. We recommend trying each of these programs in your installation. In most cases, one of the factory default programs will be suitable for your application. Each program is designed to address specific acoustic problems. None of the factory default programs can be altered. If none of the default programs produces the desired outcome, you can then custom program the MPA for your application.

User Configuration Programs

The MPA can be programmed to solve specific problems in virtually any acoustic environment. Any of the parameters which control the MPA's operation can be changed and stored in any of the six user configuration programs. (See "Custom Programming" for more information on changing configuration parameters).

Front Panel Programming Procedures

To select one of the six default programs or one of the six user configuration programs, Press and hold the PROGRAM ENABLE BUTTON, located behind the front panel door. When this button is pressed, the MIC channel gating indicators will momentarily light one at a time to indicate the MPA is ready to accept a new program. The current program will be displayed on the gating indicators. The PA level indicator shows whether the available configuration programs are default or user configuration. If the PA level indicator is green, the MIC gating indicators display the six factory default programs. If the PA level indicator is red, the MIC gating indicators display the six user configuration programs.



Press the PROGRAM SELECT button to move to the next program. (NOTE: The PROGRAM ENABLE button must remain pressed while selecting programs). Repeatedly, press the PROGRAM SELECT button until the desired program is shown on the gating indicators. Release the PROGRAM ENABLE button to load the selected program. If the MPA is turned off or loses power, the program that was selected when power was lost will automatically be loaded when power is restored.

Default Program Descriptions

Below are brief descriptions of each of the default programs. We suggest you try each one to find the one that best fits your environment. If none of the default programs accommodate your particular setting, you can create a new program using your own parameters. To create your own program refer to Custom Programming.

Program GREEN 1

This program is designed for the small to medium sized conference room where ambient noise levels are moderate (30-45 dB SPL c weighted) and minimal or no acoustic treatment has been done to the room. When no one is talking, all microphones turn off, reducing feedback potential and ambient noise. This program works well in most applications.

Program GREEN 2

This program is designed for a room that has a better acoustic environment than the room described in Program GREEN 1. The LAST-ON MODE is set to ON to keep one microphone on at all times. This prevents the "pumping" effect of ambient noise and helps make smooth transitions between two or more people. The GATE RATIO is lower than in program one, causing the mics to turn on with lower voice levels. The amount of OFF ATTENUATION is set at 12, which also helps reduce the "pumping" effect. To use this program, the room should have some acoustic treatment to minimize reverberation and speaker to microphone coupling.

Program GREEN 3

The LAST-ON MODE is set to OFF which causes all microphones to turn off when no one is speaking. The GATE RATIO is set at a relatively low value of 12. This increases microphone sensitivity to voice (and fluctuations in ambient noise!). This program should be used in a room that is acoustically treated and has very low ambient noise.

Program GREEN 4

This program is identical to Program GREEN 1 except that the GATE RATIO is 3 db lower and the HOLD TIME is reduced 1/10 of a second. The decrease in the GATE RATIO causes the microphones to turn on easier when people begin speaking. Decreased HOLD TIME causes the microphones to turn off faster at the end of sentences. This program may be preferred to Program GREEN 1 when discussions are fast paced.

Program GREEN 5

This program is designed for harsh conferencing environments. The LAST-ON MODE is set to OFF which causes all the microphones to turn off when no one is speaking. OFF ATTENUATION is set at a relatively high level of 20. This makes it more difficult for voice to turn on a microphone, but it also keeps other sounds from turning on a microphone. This program is best suited for high reverberation, high speaker to microphone coupling, and conferences where considerable background conversation is taking place. The MAXIMUM # OF MICS is set to 4, allowing only four microphones to be on at a time. This helps to minimize echo and reverberation that the other location hears as well as reduce confusion when several people are speaking simultaneously.

Program GREEN 6

This program is also designed for harsh conferencing environments. The LAST-ON MODE is set to ON, causing one microphone to be on at all times. This reduces the apparent "pumping" sound when loud ambient noises are present. The MAXIMUM # OF MICS is set to 3, which allows only three microphones on at a time. This helps to minimize echo and reverberation that the other location hears as well as reduce confusion when several people are speaking simultaneously.

**Default Program
Parameters Chart**

Config name	Green 1	Green 2	Green 3	Green 4	Green 5	Green 6
DEFAULT	ONE	TWO	THREE	FOUR	FIVE	SIX
Hold Time (tenths/sec)	4	1	4	3	5	1
Gate Ratio (dB)	18	15	12	15	20	20
Ambient Level (dBu)	-85	-85	-85	-85	-85	-85
Maximum # of Mics	6	6	6	6	4	3
Off Attenuation (dB)	15	12	12	15	20	20
Decay Rate	Slow	Med.	Slow	Slow	Slow	Slow
Adaptive Ambient Mode	ON	ON	ON	ON	ON	ON
Constant Gain Mode	ON	ON	ON	ON	ON	ON
Last-On Mode	OFF	ON	OFF	OFF	OFF	ON
PA Adaptive Mode	ON	ON	ON	ON	ON	ON
1st Mic Priority Mode	ON	ON	ON	ON	ON	ON

Custom Programming

Supplied with the MPA is a 5¼" diskette and a 3½" diskette, both containing the MPA configuration software. This software allows you to change any of the user configuration program parameters. Refer to the installation section for information on connecting the MPA to a computer.

- System Requirements**
- IBM Compatible personal computer
 - DOS 3.1 or later
 - Serial Port and RS-232 cable
 - Floppy disk drive (5¼" or 3½")
 - Hard Disk (optional)

Running the MPA Setup Software

- Insert the MPA disk into drive A.
- Set the default drive to drive A by typing **a:<enter>** at the DOS prompt.
- Type **mpa<enter>** to begin the program. The program uses default values of 9600 baud on port COM1. If you need different values use the following parameters with the command line.

mpa -s<speed> -p<port>

speed: set the serial port speed. Valid arguments are 75, 150, 300, 600, 1200, 2400, 4800, and 9600.

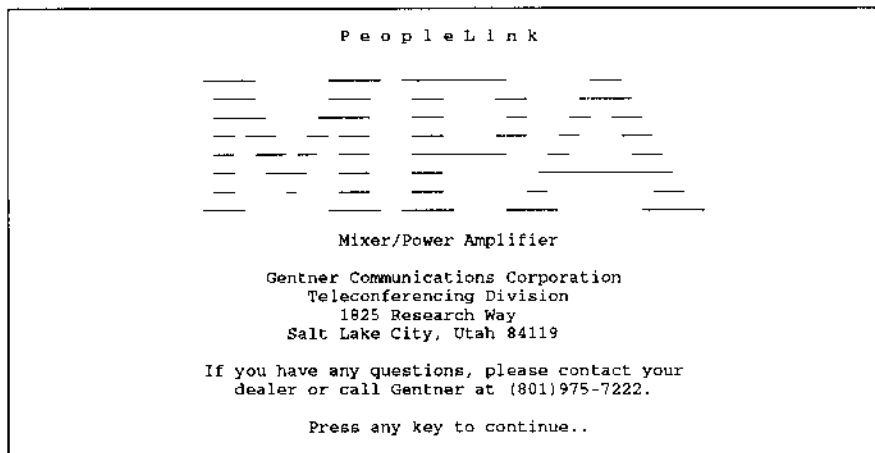
port: set the COM port to use. Valid arguments are 1, 2, 3, and 4.

For example: To use COM2: with a port speed of 2400 baud, the command line would look as follows.

mpa -s2400 -p2

Note: the parameters must be in lower case.

- The title screen appears.



- Press any key to continue. The main screen is displayed.

Config name	Red 1	Red 2	Red 3	Red 4	Red 5	Red 6
DEFAULT	ONE	TWO	THREE	FOUR	FIVE	SIX
Hold Time (tenths/sec)	4	1	4	3	5	1
Gate Ratio (dB)	18	15	12	15	20	20
Ambient Level (dBU)	-85	-85	-85	-85	-85	-85
Maximum # of Mics	6	6	6	6	4	3
Off Attenuation (dB)	15	12	12	15	20	20
Decay Rate	Slow	Med.	Slow	Slow	Slow	Slow
Adaptive Ambient Mode	ON	ON	ON	ON	ON	ON
Constant Gain Mode	ON	ON	ON	ON	ON	ON
Last-On Mode	OFF	ON	OFF	OFF	OFF	ON
PA Adaptive Mode	ON	ON	ON	ON	ON	ON
1st Mic Priority Mode	ON	ON	ON	ON	ON	ON

Move Cursor, Space/Backspace-Change.

A:\

F1-Help F3-Save Config P5-Save Program F7-Send to MPA P9-ChDir
 F2-Select Pgm F4-Load Config P6-Load Program F8-Recv from MPA F10-Exit

Understanding the main screen

The program uses two types of data files: configuration files and program files. A configuration file is made up of six program files. The six program files are listed in columns underneath the headings Red 1 through Red 6. When you load a configuration file, the six program files that are associated with the configuration file are loaded. When you load a program file, only that particular program is loaded in. There are eight basic parts to the main screen.

Config Name: The name of the current configuration file. A configuration file contains the file names of six program files.

MPA Location: Location in the MPA where the program will be stored.

Program Name: The name of the current program file. A program file contains the parameter values for one program.

Parameter Values: The current parameter values of the program.

Function Keys: Allows you to perform various functions such a load and save files to and from disk and send and receive programs to and from the MPA. See "Function Keys" for more information.

Current Drive and Directory: The current drive and directory where files are loaded and saved.

Prompt Line: Shows valid keyboard actions.

Program Parameters: Program parameter labels.

Moving around the screen.

Use the four arrow keys to move the cursor around the screen. When a parameter is highlighted, use the space bar to increase the value and use the backspace key to decrease the value.

Function Keys

Below are descriptions of the function keys used in the program.

F1-Help: Press F1 to bring up a help screen on the highlighted parameter. The help screen gives a brief description of the parameter and the ranges that can be entered.

F2-Select Pgm: Press F2 to bring up the program selection screen. This allows you to select which program will be active on the MPA. Note: This function does not send the Parameter Values of the selected program to the MPA. If you have changed the Parameter Values on the main screen, you must first send the modified programs to the MPA using F7-Send to MPA.

F3-Save Config: Press F3 to save a configuration file and the six programs files to disk, under seven separate files. The configuration file is saved under the Configuration Name with a .cfg extension. The program files are saved under the Program Names with .mpa extensions. If a file already exists, the program displays a prompt, asking you if you wish to overwrite the file or leave the file alone.

F4-Load Config: In the Configuration Name location, type the name of the configuration file you wish to load. You can also press shift-F1 to get a listing of the configuration files in the current drive and directory. After you have chosen the Configuration Name, press F4. This causes the six program files associated with the configuration file to be loaded from the disk.

F5-Save Program: To save a program to disk, move the highlight to the program you wish to save and press F5. The program file is saved under the Program Name with a .mpa extension. If the file already exists, the program displays a prompt, asking you if you wish to overwrite the file or leave the file.

F6-Load Program: With the cursor in a Program Name location, type the name of the program file you wish to load. You can also press shift-F1 to display a listing of the program files in the current drive and directory. After you have chosen the Program Name, press F6. This causes the selected program file to be loaded from disk.

F7-Send to MPA: Press F7 to send all six programs to the MPA through the serial COM port.

F8-Recv from MPA: Press F8 to receive all six programs from the MPA through the serial COM port. Note: Program Names are not stored in the MPA so when you receive programs from the MPA, the Program Names will remain unchanged on the menu screen.

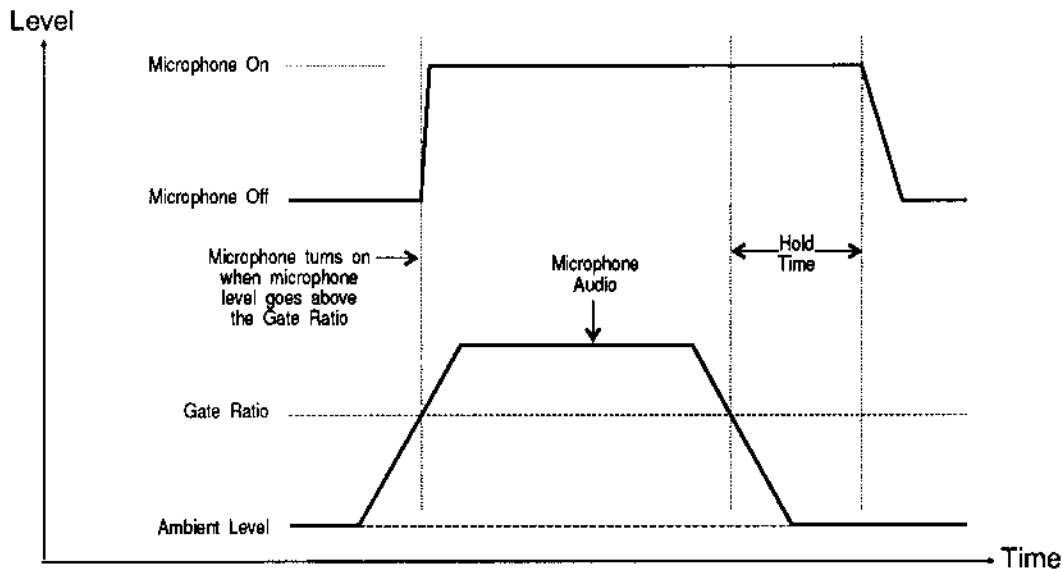
F9-ChDir: Press F9 to change to a different drive and directory. When you press this button a screen comes up that shows the current drive and directory and any sub-directories within the current directory. To change to a different drive, press F9 again and select a drive. To change to a different directory, highlight the desired directory and press <enter>. To move up one directory, highlight the double periods and press <enter>.

F10-Exit: Press F10 to exit from the program. If any changes have been made that have not been saved, the program warns you that the changes have not been saved and allows you to return to the program.

Program Parameters Below are descriptions of each of the Program Parameters.

Hold Time: This determines the length of time that a microphone remains on after the microphone audio level drops below the **Gate Ratio** threshold. Values range from 0.1 seconds to 3.0 seconds in .10 of a second increments. Setting this value too low may cause the microphones to turn on and off to frequently during brief pauses of speech. However, setting this value too high may cause too many microphones to be on at one time. A typical setting is between 0.1 seconds and 0.5 seconds.

Gate Ratio:



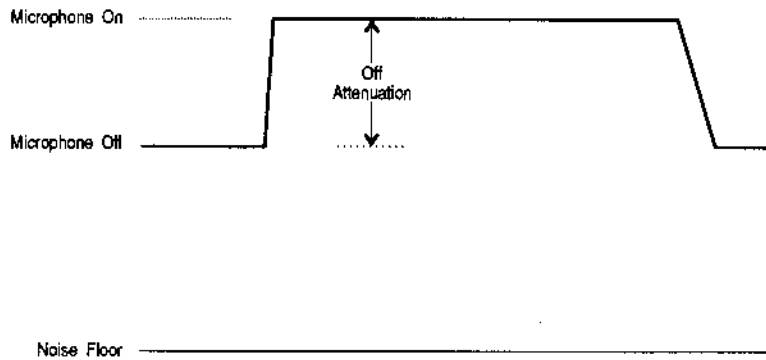
This specifies how much louder the microphone audio level must be above the **Ambient Level** before a microphone turns on. Remember, this value is relative to the ambient level. If **Adaptive Ambient Mode** is on, the actual on-threshold changes as the ambient level changes. Values range from 0 dB to 50 dB in 1 dB increments. Set this value as low as possible without the microphones turning on from room noises. If the microphones frequently turn on when no one is speaking, increase the gate ratio.

Ambient Level: This setting is relevant only if the **Adaptive Ambient Mode** is off. Best results are usually achieved when the **Adaptive Ambient Mode** is on. However, if you need to set the **Ambient Level** to a fixed value, turn off the **Adaptive Ambient Mode**. The **Ambient Level** is measured in dBm and ranges from -105 dBm to -39 dBm. You can empirically find the ambient level by following the steps below.

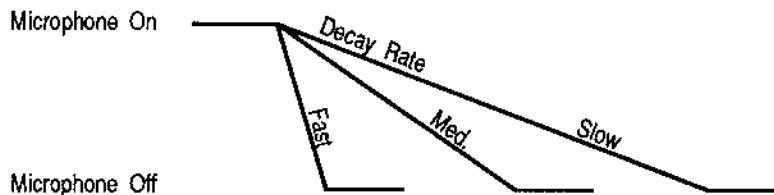
1. Set the **Gate Ratio** to zero (write down the current value).
2. Set the **Ambient Level** to -72 and press F7.
3. If the microphones are on, increase the **Ambient Level** to a value half way between the current value and the last tried highest value and press F7. For the first time through, the new value would be -55. This is derived by taking the average of the two values $\left(\frac{(-72)+(-39)}{2} = 55.5\right)$.
4. If the microphones are off, decrease the **Ambient Level** to a value half way between the current value and the last tried low value and press F7. For the first time through, the new value would be 89. This is derived by taking the average of the two values $\left(\frac{(-72)+(-105)}{2} = 88.5\right)$.
5. Repeat steps 3 and 4 until you find the threshold between when the microphones are on and when they are off.
6. Reset the **Gate Ratio** to the original value and press F7.

Maximum # of Mics: This parameter sets the maximum number of microphones that can be on at any one time. Values range from 1 to 6 microphones. If **1st Mic Priority Mode** is set to on, then the recommended **Maximum # of Mics** is 6. If **1st Mic Priority Mode** is set to off, you may need to reduce the **Maximum # of Mics** to a lower value.

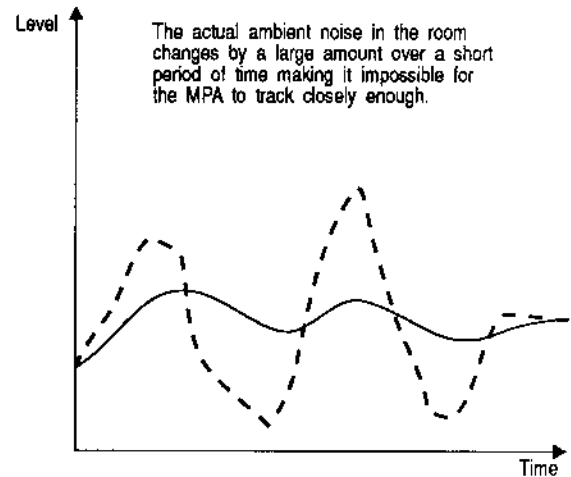
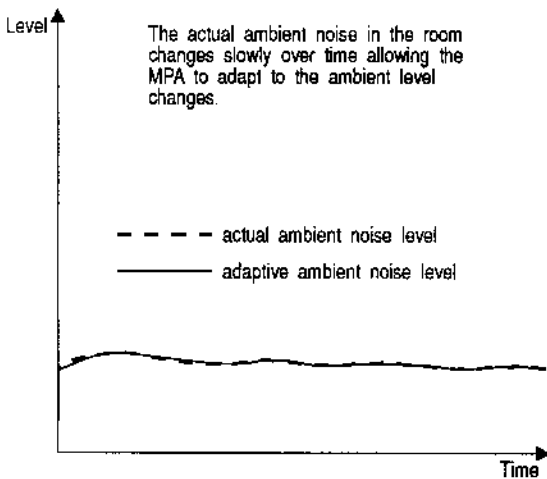
Off Attenuation: This sets the amount of level reduction applied to a microphone when it is not on. The lower the value, the closer the audio is to being natural. However, low values also increase the amount of echo and reverberation allowed into the system. If the value is set too high, you may be able to hear the microphones gate on and off as the background noise is reduced. **Off Attenuation** is measured in dB and ranges from 0 to 50 dB. The recommended starting setting is 15 dB.



Decay Rate: This determines how fast a microphone turns off after the **Hold Time** expires. Three options are available: slow, medium and fast. If your room is quiet (very low ambient noise), set the value to fast. This reduces the effects of echo and reverberation. If you hear ambient noise "swoosh" down while the microphones decay, set this value to either medium or slow.



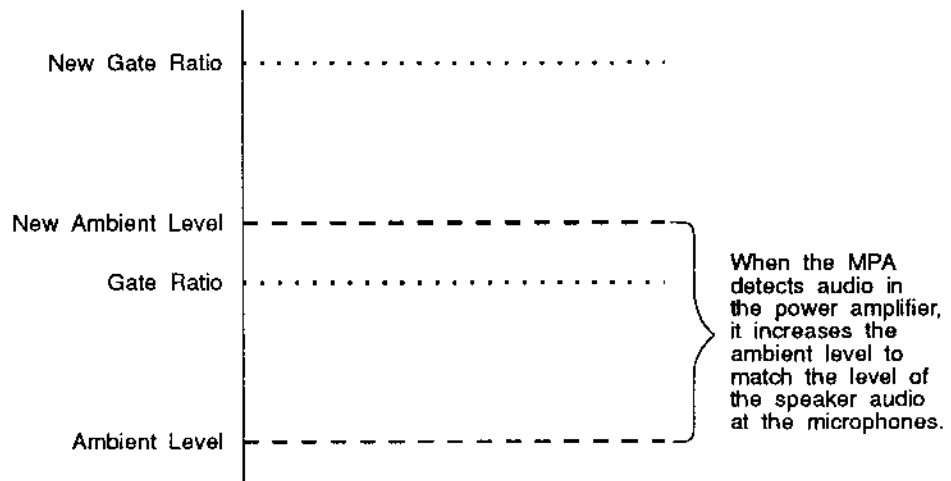
Adaptive Ambient Mode: The **Adaptive Ambient Mode** can be turned on and off. We recommend that you keep it set to on. If the ambient noise in the room is constantly changing and the MPA is unable to track properly, turn this mode off and set the ambient level manually using **Ambient Level**.



Constant Gain Mode: Constant gain corrects for the increased output level when more than one microphone is turned on. As microphones turn on, the MPA reduces the level according to the number of microphones on. This mode can be turned on or off. It is recommended that you leave this mode turned on.

Last-On Mode: When **Last-On Mode** is set to on, the last microphone turned on stays on until another microphone is turned on. It is recommended that you leave this mode turned on since it makes smoother transitions between microphones as they turn on and off.

PA Adaptive Mode: When the **PA Adaptive Mode** is turned on, the MPA recognizes how much speaker audio is picked up by the microphones. The mixer uses this level as the ambient level when audio is present at the power amplifier. This prevents speaker audio from turning on microphones while still allowing people in the room to turn on microphones as they speak.



1st Mic Priority Mode: When the **1st Mic Priority Mode** is turned on, it reduces the chance of more than one microphone turning on when only one person is speaking. This helps keep audio intelligibility at a maximum. It is recommended that this setting be left on. When turned off, usually two or more microphones turn on when only one person speaks. However, when this parameter is turned on, one person will usually be able to turn on only one microphone. It does this by determining the audio level received by all microphones when the first microphone is turned on. This audio level is then used as the ambient level for all other microphones.

On-Screen Help

To get help on a particular parameter, highlight it and press F1. A window will pop up which gives information about the parameter. Included in the information is a description about what it does, the range of values, and recommended settings. After you are finished reading the help screen, press any key to return to the main menu.

Sending Configurations to the MPA

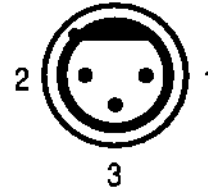
After completing the editing procedures, the new parameters need to be sent to the MPA. All six user configuration programs are sent to the MPA at one time. To send the configuration programs press F7. The MPA front panel LEDs flash indicating that the MPA is receiving the programs. A window will pop up that shows the information being sent to the MPA. After all programs have been sent, the LEDs stop flashing and the computer screen returns to the main menu. The MPA is now ready for operation.

- Receiving Configuration Programs from the MPA** To receive configuration programs from the MPA into the computer, press F8 in the main menu. The LEDs on the front panel flash indicating the MPA is sending the programs. A window will pop up which shows the information being received. After the programs have been received, the computer returns to the main menu.
- Saving Configurations to Disk** To save the configuration to disk, type a name in the Configuration Name field. Next, type the names of programs in the Program Name field for the six programs. The file names must be 8 characters or less and contain only letters and numbers. After you have named the configuration file and the six program files, press F3. To save an individual program, refer to "Saving Programs to Disk."
- Saving Programs to Disk** To save an individual program to disk, type the name of the program in the Program Name field. Use the arrow keys to highlight a parameter in the program you are saving and press F5.
- Loading Configurations From Disk** To load an existing set of configuration programs from disk, type the name of the configuration in the Configuration Name field and press F4. The screen displays "Reading *filename...*" while loading the configuration programs. The programs are now available to edit.
- Loading Programs from Disk** To load a program from disk, type the name of the program in one of the six Program Name fields and press F6. After the program is loaded, it is available to edit.
- Activating a Program From the Computer** The computer can be used to select the current configuration program in the MPA. To choose one of the 12 configuration programs, press F2 in the main menu of the configuration program. Use the up and down keys to select a program and press ENTER. Remember, pressing F2 does not send program data to the MPA. It only activates the program that is already resident on the MPA. Press F10 to return to the main menu.
- Changing Directories** The current directory is shown in the prompt window. To change the directory where files are saved and loaded, press F9. A list of directories is displayed. Use the arrow keys to highlight a directory. To move up one directory, highlight the double periods. After highlighting your selection, press ENTER.
- Changing Drives** To change to a different drive, press F9 twice. A list of the disk drives on your computer is displayed. Use the arrow keys to highlight a drive and press ENTER.
- Exiting the Setup Program** To exit the setup program, press F10 in the main menu. This returns control of the computer back to DOS.

Connectors

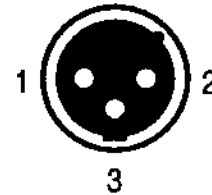
PA Input and MIC 1 through MIC 6

- 1. GND
- 2. + audio
- 3. - audio



PA Output and Master Output

- 1. GND
- 2. + audio
- 3. - audio

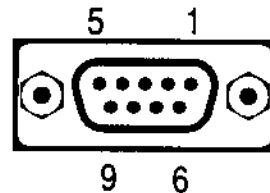


Auxiliary Input and Output



RS-232 COM Port

- 1. n/c
- 2. TXD
- 3. RXD
- 4. n/c
- 5. GND
- 6. n/c
- 7. n/c
- 8. n/c
- 9. n/c



Specifications

Physical

Dimensions	19" (W) X 3.5" (H) X 11" (D) 48.3 (W) X 8.9 (H) X 27.9 (D) cm
Weight	12 lbs (5.4 kg) dry weight 15 lbs (6.8 kg) shipping weight
Connectors	
Power Input	Fused multiple voltage module
Aux Power Output	3-pin grounded power exit module
Master Output	3-pin male XLR
Auxiliary In/Out	Phono
RS-232 Port	DB-9 female
Speaker	Spring loaded wire clamps
Mic Inputs	3-pin female XLR
PA Output	3-pin male XLR
PA Input	3-pin female XLR

Electrical/Performance

Power	100/120/220/240 VAC; 50/60 Hz
MPA Mixer	
Signal/Noise Ratio	>60 dB ref. -55 dBu input, +4 dBm output
T.H.D.	<.1%
Frequency Response	+/- 1 dB, 20 Hz - 20 kHz
Gating Method	Reconfigurable, microprocessor controlled
Hold Time	.1 to 3 sec., adjustable
Off Attenuation	-50 dB to -1 dB, adjustable
Phantom Power	+30 V, individual channel selectable
MPA Power Amplifier	
Maximum Output Power	15 Watts into 8 ohms
Signal/Noise Ratio	>80 dB ref. +4 dBm input, 15 Watts into 8 ohms output
T.H.D.	<.1%
Frequency Response	+/- 3 dB, 20 Hz - 20 kHz; +/- 1 dB, 50 Hz - 20 kHz
Com Port	RS-232, 75-9600 baud selectable

Levels

Master Output	+4 dBm nominal, adjustable; 600 ohms; balanced
Auxiliary In	-10 dBu nominal, adjustable; 10 kohms; unbalanced
Auxiliary Out	-10 dBu nominal, adjustable; 1 kohms; unbalanced
Speaker	15 Watts into 8 ohms, adjustable
Mic Inputs	-55 dBu nominal, adjustable; 1.5 kohms; balanced; bridging
PA Output	+4 dBm nominal; 600 ohms balanced
PA Input	+4 dBm nominal, adjustable; 20 kohms; balanced; bridging

Specifications are subject to change without notice