Gentner

MPAII

Installation and Operations Manual

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MPAII Installation and Operations Manual
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This equipment complies with the requirements of the EU guidelines:

CE

89/336/EEC	"Electromagnetic Compatibility"
73/23/EEC	"Electrical operating material for use within specific voltage limits"

Conformity of the equipment with the above guidelines is attested by the CE mark.

Gentner Communications Corporation is committed to protecting the environment and preserving our natural resources.

This manual has been printed entirely on recycled paper.

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Introduction

Congratulations on purchasing the MPAII Mixer/Power Amplifier II. This eight-channel, PC-controlled, automatic microphone mixer and power amplifier is a proven solution for distance learning, panel discussions, audioconferencing and videoconferencing applications, broadcast studios, courtrooms, hotels and government meetings.

The MPAII contains commonly requested features such as an RS232 connection for PC control, logic output and user-programmable gated microphone operation. The latter allows you select which microphones and how many you wish to gate or not to gate; this reduces noise and increases intelligibility. The MPAII also comes equipped with several factory-designed programs and user-changeable programs to compliment any environmental need.

This manual explains how to install, set up and operate your MPAII. It also provides instructions on how to improve room acoustics and resolve minor technical problems, should any arise.

If you need information on how to install, set up or operate your system, please contact Gentner Communications Corporation at the location noted below. We welcome and encourage your comments so we can continue to improve our products and serve your teleconferencing needs.

Gentner Communications Corporation
1825 Research Way
Salt Lake City, Utah 84119

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FAX: Worldwide (801) 977-0087 In U.S.A. (800) 933-5107
FAX-On-Demand 24-Hour Information line (800) 695-8110
Worldwide Web Page @ http:\\www.gentner.com

Warranty Registration

Please register your MPAII by completing the self-addressed, postage prepaid warranty registration card and return it to Gentner Communications by mail. You may also FAX it to the above listed fax number or call Gentner Communications. When your product is properly registered, Gentner Communications will be able to serve you better should you require technical assistance or desire to receive upgrades, new product information, etc.

Unpacking

Ensure that the following equipment (See Figure 1, below.) was received with your shipment:

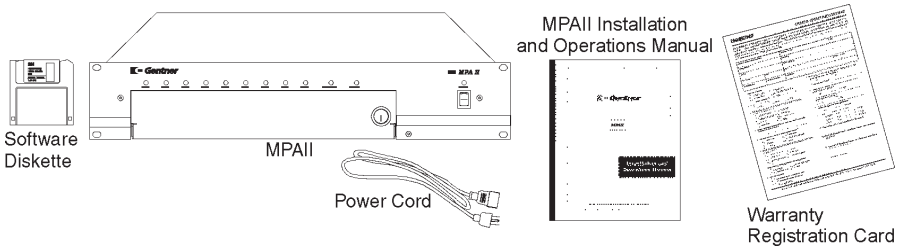


Figure 1. Equipment diagram

SHIPPING NOTE:
Gentner Communications is not responsible for product damage incurred during shipment. You must make claims directly with the carrier. Inspect your shipment carefully for obvious signs of damage. If the shipment appears damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

Features and Benefits

- Eight-channel automatic/non-automatic, gated microphone mixer and two 15W power amplifiers
- AUX IN connector for audio feed (CD/tape)/AUX OUT connector for recording
- PC-programmable for easy setup with supplied software
- Six factory-preset programs and six user-programmable parameters
- RS232 port with supplied software for custom programming
- Logic output (DB15) connector for controlling cameras, etc.
- Switchable microphone phantom power
- Easy to set up and operate
- Increased audio intelligibility
- Reduced risk of feedback
- Tamper-proof after setup
- Expandable

Applications

The MPAII can be tailored to most any application including audioconferencing and videoconferencing, courtrooms and public meetings, distance learning, hotels and government meetings, houses of worship and talk shows.

Audioconferencing and Videoconferencing

The MPAII's design makes the equipment particularly useful in audioconferencing and videoconferencing applications where quality audio is a must. With the logic output, it is possible to connect the MPAII to cameras, electronic signs, and other equipment that can be controlled electronically.

Courtrooms and Public Meetings

Courtrooms, city councils and other public meeting rooms also use the MPAII successfully because of its ability to control up to eight microphones. With simple setup routines and programming options, you can tailor your meeting's PA operation to its best room and acoustic advantage.

Distance Learning

Distance-learning applications, where multiple sites are connected, often using multiple microphones and speakers — often at each location — can be managed with the MPAII. These meetings can be managed easily with the MPAII's intuitive programs available.

Hotels and Government Meetings

Business meetings, hotels and convention centers find the MPAII a useful tool when conducting panel discussions where several participants each have their own microphone.

The MPAII contains many unique features that make the MPAII simple to set up and use. Specific user programming capabilities tailor-make MPAII functionality to suit the environment in which it is used.

Houses of Worship

This application presents some unique challenges in providing sufficient and balanced audio for the congregation. Choirs, the soloist, organist or pianist, speakers, and the minister may all require microphone coverage at one time or another during the session. The MPAII, with its standard and custom programming options, allow for such variety.

Talk Shows

The same techniques can be applied in talk show formats where single or multiple microphones are used. Because of the variety of setup routines for different talk-show formats, microphones can be preset to automatically gate on during use and gate off when not in use. Feedback and extra noise are eliminated.

For more detailed explanations of MPAII use in these applications, see Appendix D (Page 36).

Product Description

MPAII

Microphone mixers can be classified into three basic types: non-gating, gating, and automatic. The MPAII is an automatic microphone mixer, the most advanced type of mixer. For explanations of non-gating and gating types, see Appendix A (Page 28).

The MPAII is especially well suited to overcoming excessive room noise, reverberation, and other problems associated with multi-microphone installations. The gain (mixing level) of each microphone is automatically adjusted based on audio levels. The MPAII monitors the audio levels at each microphone and reduces 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.

The MPAII operates on two basic principles. First, the MPAII gates microphones on/off when the sound within a microphone's acceptance pattern reaches a certain level. Second, the MPAII makes decisions for each microphone individually, based on each microphone's specific 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.

Product Description Continued

Front-Panel Controls

The MPAII front-panel control (See Figure 2, below.) perform the following functions. The controls are numbered for easy indentification.

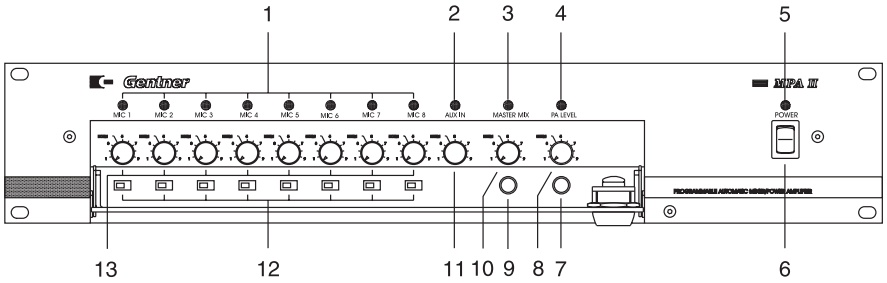


Figure 2. MPAII front-panel controls

1. *Mic 1–Mic 8* LEDs. These LEDs light green when the corresponding microphone gates ON. They *do not* indicate signal level.

GATING LED NOTE:
These indicators, in conjunction with the PA LEVEL indicator [4], will also be used to indicate whether the current operating program is one of the six factory preset programs (the PA LEVEL LED will glow green), or one of six user-defined programs (the PA LEVEL LED will glow red). See Page 14 for a more detailed explanation of this feature.

2. *Aux In* LED. This LED lights green to indicate audio presence on the auxiliary channel. It *does not* indicate signal level.

3. *Master Mix* LED. This LED indicates 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* LED. This LED indicates 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* LED. This LED lights green when power is being received by the MPAII and the POWER switch [6] is ON.

6. *Power* Switch. This switch turns ON/OFF the MPAII and any equipment connected to the auxiliary power connector.

7. *Program* Button. This button, when pressed, scrolls through the 12 MPAII operation programs. The MIC LEDs [1] and the PA LEVEL LED [4] display which program the MPAII is currently running. When the PA LEVEL LED is green, the six factory default programs are shown on MIC 1–MIC 6 LEDs. When the PA LEVEL LED is red, the six user-programmable programs are shown. Hold down the PROGRAM button to use the selected program.

8. *PA Level* Control. This control is used to adjust the audio level to the power amplifier.

9. *Program B* Button. This button, when held down, selects a program. When this button is pressed, MIC LEDs [1] momentarily cycle on, one at a time, to indicate the MPAII is ready to select a new program. Complete instructions begin on Page 14.

10. *Master Mix* Control. This control is used to adjust the audio level of the mixer's MASTER OUTPUT.

11. *Aux Input* Control. This control adjusts the audio level into the mixer received through the AUXILIARY INPUT connector.

12. *Mic 1–8* Auto-Mix Switches. These switches enable and disable auto mixing on each microphone channel.

13. *Mic 1–8* Controls. These controls adjust the audio level received by each microphone.

Back-Panel Connectors

1. *Power* Connector (AC). Connect a power cord (See Figure 3, below.) between this connector and the line voltage source.

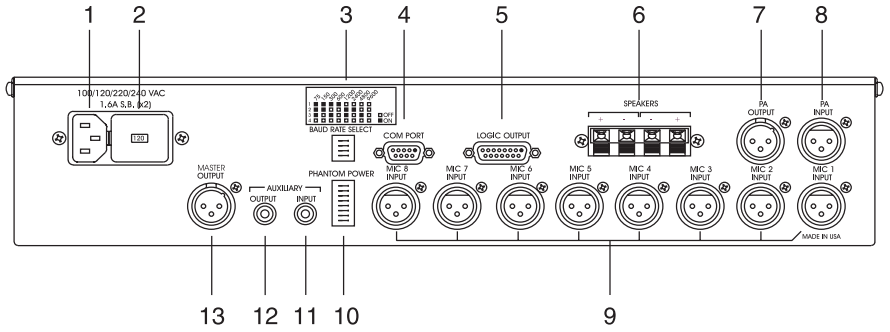


Figure 3. MPAII back-panel connectors

2. *Line Voltage* Selector. Select the line voltage input as 100V, 120V, 220V, 240V.

3. *Baud Rate Select*. The correct baud rate must be set to interface your MPAII with your PC for programming. Proper selection of the baud rate is required for correct communication between the MPAII and the PC.

4. *COM Port*. Connect this RS232 port to your PC or other programming device.

5. *Logic Output* Connector. This connects to any electronic equipment you choose (i.e. cameras, signage, timers). When connected to a camera, for example, the camera will focus on the area in which the microphone is placed when the microphone become active.

6. *Speakers* Jacks. Connect 8ohm speakers here.

7. *PA Output* Connector. Loop the MPAII input to additional MPAIIs or other devices.

8. *PA Input* Connector. Connect to the mixer's output or external device to route audio to the power amplifier.

9. *Mic Input 1–8* Connectors. Connect microphones here. Each input corresponds to the microphone-channel indicators and adjustments on the front panel.

10. *Phantom Power* Selector. These back-panel dip switches are easily

Product Description Continued

accessible for switching phantom power ON/OFF to accommodate your microphone requirements.

11. *Auxiliary Input* Connector. This is an additional non-gated input (See Figure 3a, below.) to the mixer. Connect this input to the Auxiliary output of another MPAII for expansion, or to input audio from a tape player or other audio source. This audio is combined with the audio from the eight microphones.

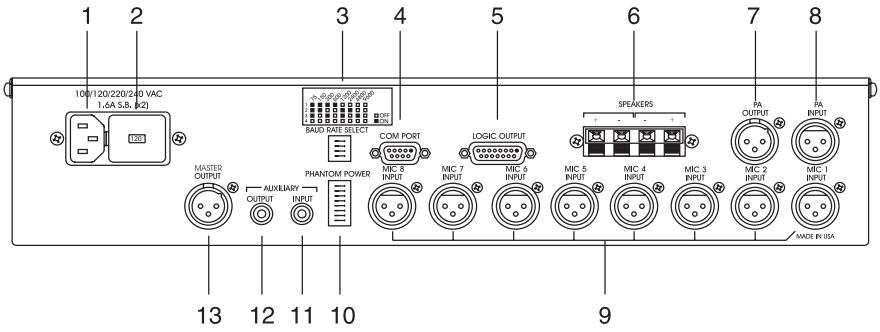


Figure 3a. MPAII back-panel connectors

12. *Auxiliary Output* Connector. This is an unbalanced output. Use this connector to connect to the auxiliary input of another MPAII when adding additional microphones, or to a tape recorder to record the audio on all microphones. This audio is combined with the audio from the eight microphones.

13. *Master Output* Connector. This is the balanced output of all microphones and the auxiliary input.

Before You Install

The MPAII is designed to work in almost any acoustic environment. However, to maximize your audio quality, we recommend that you prepare your site by taking the following factors into consideration:

Room Planning

Before installing your MPAII, we recommend that you carefully plan your 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 MPAII, but will assist you in the installation and operation of other equipment used in your audioconference.

Acoustics

Just as humans have unique personalities, conference and broadcasting rooms have unique acoustic environments. Each room has a different acoustic make up (Figure 4, next page, top). 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 impact the room's acoustic conditions.

Directly related to the room's acoustic make up are several problems common to all conferencing and broadcast situations: reverberation, acoustic echo and ambient noise. The objective is to minimize the impact that these conditions have on your audioconference.

Reverberation. Reverberation is the persistence of sound due to repeated

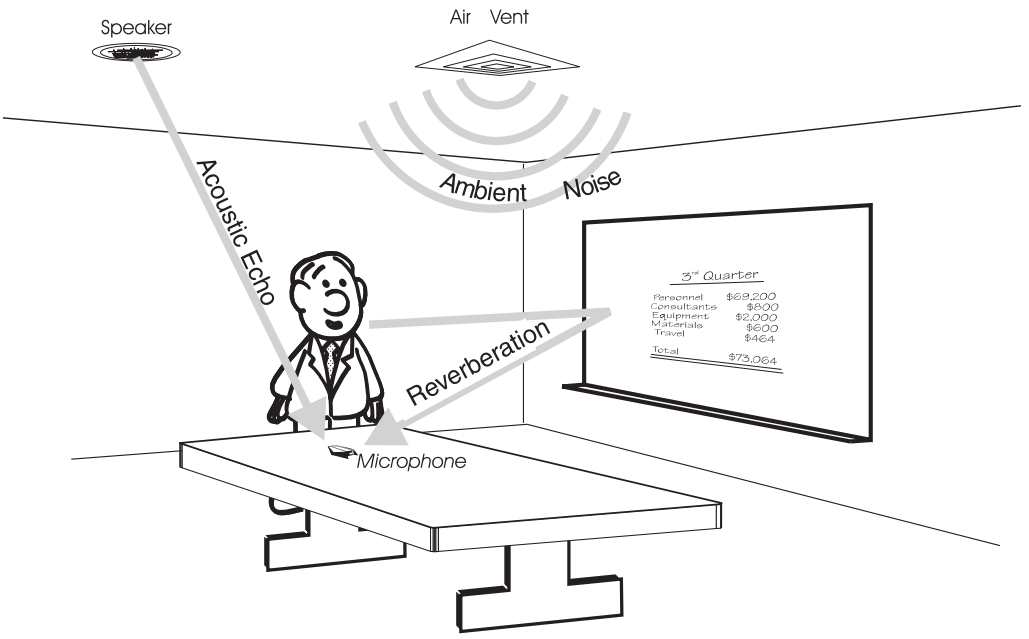


Figure 4. Room acoustics diagram

reflections from walls, ceiling, floor, furniture and occupants in a room. Reverberation dissipates over a fixed period of time determined by the room's environment.

Acoustic Echo. Acoustic echo is the sudden return of sound (rather than a smooth decay) caused primarily by a delay in the network or environment. It occurs before or after 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.

Gentner offers several products with echo cancellation and other advanced features to suit your application and space. Although acoustic room treatment helps reduce acoustic echo, it will not completely eliminate it. Gentner's TI7200 Teleconferencing Interface, GT300 and GT700 Group Teleconferencers, GT724 Group Teleconferencer (with simultaneous two-wire/four-wire operation), and the G3200 Super Hybrid all perform these functions. Each is a telephone-interface product, designed to electronically eliminate all residual acoustic echo at its source. Contact Gentner or your dealer for more information on these excellent conferencing products.

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, heating fans, and noises created outside the room but still audible inside the room, are all examples of ambient noise.

Acoustic Room Treatment

Conference-room treatment is recommended to improve audio quality. Rooms that have large areas of windows, white boards, hard floors, etc., are acoustically "live." These areas increase the amount of audio reverberation.

You can improve room acoustics by installing acoustic panels, drapes and other wall fabrics. Another way to improve overall room acoustics is to keep ambient noise to a minimum.

Before You Install Continued

Conference Room Layout

Figure 5 (below) is a block diagram of a basic audioconferencing installation using the MPAII. The MPAII 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 MPAII to be amplified and sent to the speaker(s). When using Gentner's TI7200, GT300, GT700 and/or GT724 telephone-interface products, 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 or, in the case of the GT724, RS232 serial port touch tones.

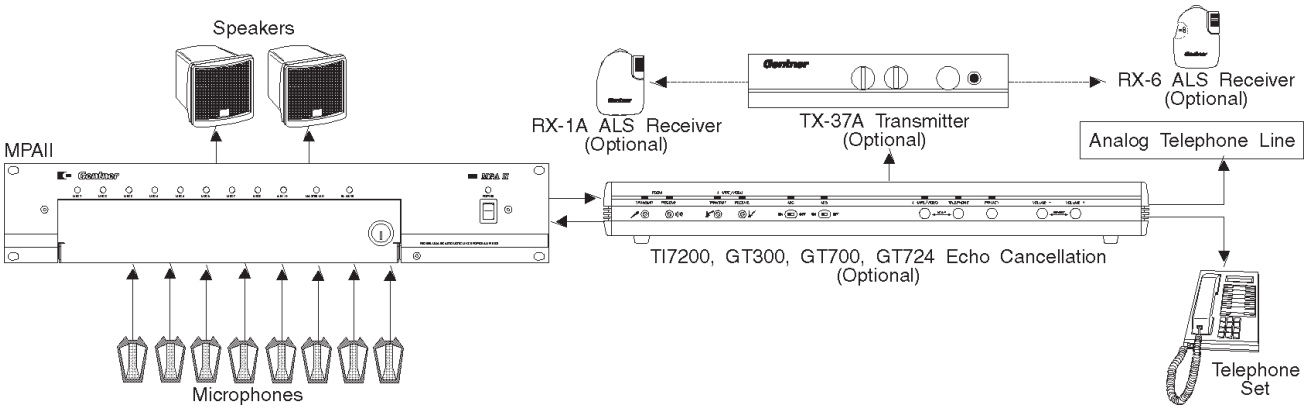


Figure 5. Conference room block diagram

Microphone Selection

The type of microphone you select can have a dramatic impact on the audio 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, a unidirectional microphone with a cardioid pattern is the preferred choice for teleconferencing applications. Its design allows for maximum pickup from the front of the microphone and minimum pickup from the rear. Cardioid microphones are available in several styles including tabletop, podium and lavaliere.

Tabletop

Tabletop (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

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.

Lavaliere

Lavaliere microphones are used when speaker mobility 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 audioconferencing 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

unidirectional microphones and placing the speaker out of the optimum pickup area (Figure 6, below).

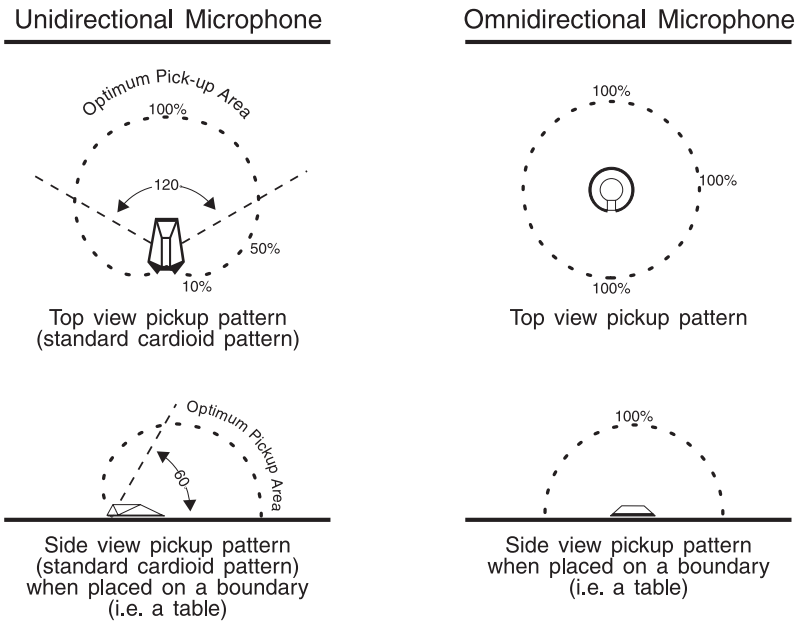


Figure 6. Microphone isolation diagram

Power Requirements

The MPAII will accommodate voltage requirements ranging from 100/120/220/240Vac, 50/60Hz power. It is shipped set at 120Vac. To select the other voltage inputs, minimal switching is required (see Step 1 — Voltage Input Selection, next page).

PC Option

For best performance, your PC should have a free COM port, and be running on DOS 3.1 or later.

Auxiliary Equipment

Any auxiliary equipment to be used with the MPAII (i.e. echo canceller, microphones, speakers, recording equipment, etc.) should be available at time of installation.

Equipment Placement

The MPAII is designed for mounting in a 19" equipment rack. *Do not* block any of the ventilation holes.

Environmental Requirements

The MPAII can be safely operated in a room with varying temperatures between 32° and 110° F.

Installation

Follow these step-by-step instructions to install your MPAII:

Completed Installation

The following block diagram (See Figure 7, below.) shows the MPAII system when installation is complete.

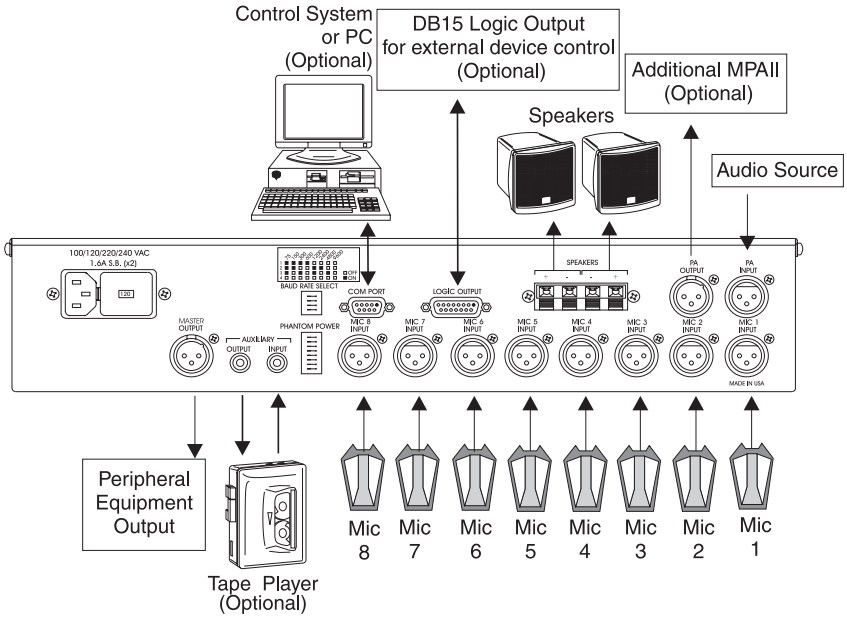


Figure 7. Completed MPAII installation

Step 1 — Voltage Input Selection

Your MPAII was shipped to you ready to use with a 120Vac 50/60Hz power source. If this suits your MPAII application, go to Step 2 — PA Connections (next page). If your application requires a different voltage input, follow the procedure below, while referring to Figure 8 (below):

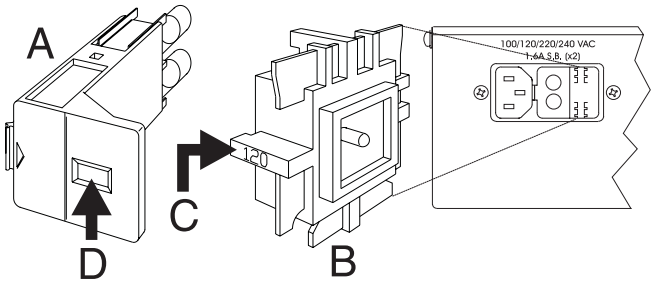


Figure 8. Voltage-input selection

Step 1
Unplug the electrical power cable from the rear panel.

Step 2
Using a small screwdriver, remove the cover [A] from the line-voltage module.

Step 3
Using needle-nose pliers, remove the white jumper board [B].

Step 4
Rotate the jumper board to the desired voltage: 100,120, 220 or 240 [C].

Step 5
Replace the jumper board with the desired voltage facing *out.*

Step 6
Replace the cover and verify that the correct voltage is displayed through the cover's window [D].

Step 2 — Back-Panel Connections

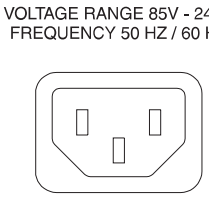


Figure 9. MPAII power module

Power
The power module [1] (See Figure 9, left; Figure 10, below.) will operate at any of four levels (100/120/220/240Vac; see Step 1, previous page). Plug the power cord into the power module.

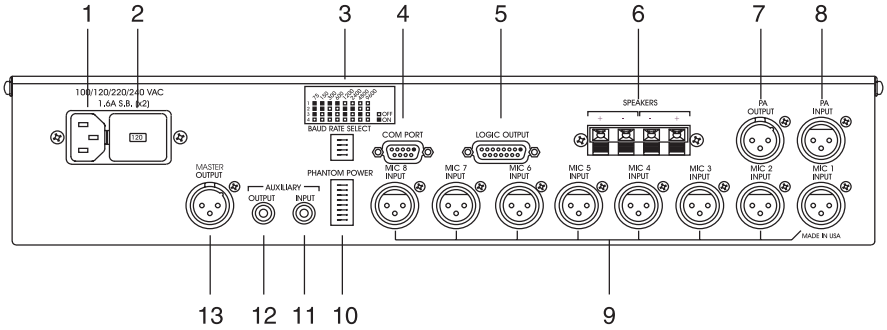


Figure 10. MPAII back-panel connectors

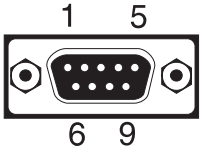


Figure 11. MPAII COM port connector

COM Port
Connect the MPAII's RS232 COM PORT [4] (See Figure 11, left.) to COM1 of a PC. For pinouts, see Appendix B, Page 29.

BAUD RATE NOTE:
The MPAII's baud rate as shipped from the factory is 9,600 baud. This is the correct setting for most applications. However, if your application requires a different baud rate, refer to Step 5 — Baud Rate on Page 13 to change this setting.

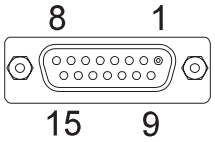


Figure 12. MPAII logic output DB15 connector

Logic Output
Connect the DB15 LOGIC OUTPUT [5] (See Figure 12, left.) open collector to the equipment you need to control. This can be a video camera, a recorder or some other device you may wish to control through microphone gating.

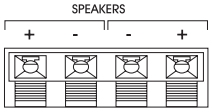


Figure 13. MPAII speaker connectors

Speaker
Connect speaker wire between the MPAII's speaker connectors [6] (See Figure 13, left.) and the speakers.

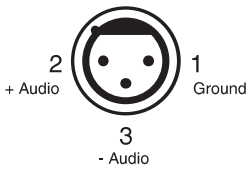


Figure 14. MPAII PA Input female XLR connector

PA Output/PA Input
Single MPAII. Connect the output of the audio source to MPAII's PA INPUT [8] (Figure 14, left) female XLR connector.

Multiple MPAIIs. When applicable, connect the MPAII's PA OUTPUT [7] male XLR connector (See Figure 15, left.) to the PA INPUT [8] (See Figure 14, left.) of the *additional* MPAII.

Figure 15. MPAII PA Output/Master Output male XLR connector

Master Output
Connect the MPAII's MASTER OUTPUT [13] male XLR connector (See Figure 15, left.) to the input of the peripheral equipment.

Installation Continued

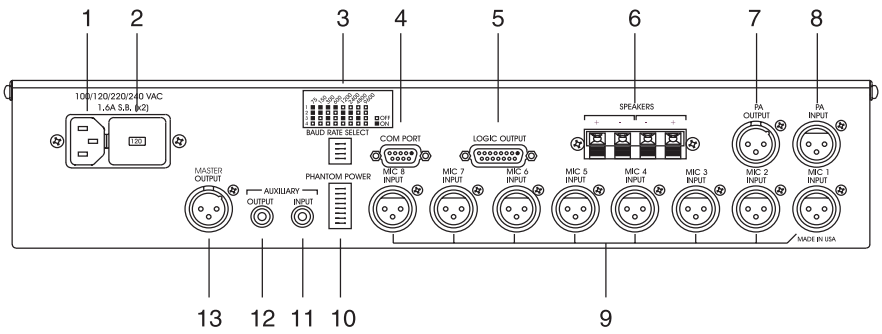


Figure 16. MPAII back-panel connectors

Figure 17. MPAII Microphone male XLR connector

Figure 18. MPAII auxiliary input/output equipment RCA connector

Microphones

Connect the MPAII's MIC 1–8 INPUT [9] (See Figure 16, above; Figure 17, left.) female XLR connectors to the microphones.

Auxiliary Equipment

Single MPAII. Auxiliary Output. When applicable, connect the MPAII's AUXILIARY OUTPUT [12] RCA connector (See Figure 18, left.) to the input of your auxiliary equipment.

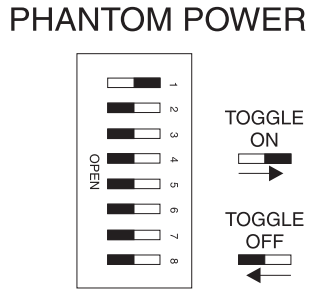
Auxiliary Input. Connect the output of your auxiliary equipment to MPAII's AUXILIARY INPUT [11] RCA connector (Figure 18, left).

Multiple MPAIIs. When applicable, connect the MPAII's AUXILIARY OUTPUT [12] RCA connector to the AUXILIARY INPUT [11] RCA connector of the *additional* MPAII for additional microphones.

Step 3 — Phantom Power Configuration

The MPAII comes from the factory with phantom power enabled. If the MPAII is used with Gentner microphones, phantom power should be left *enabled*. Go to Step 4 — Auto Mix Switches (next page).

If you are using another manufacturer's microphone, check their manual or contact the manufacturer to determine if phantom power is required. If your microphones do not require phantom power, follow the steps below:



In this diagram, MIC 1 is configured for phantom power and MIC 2 through MIC 8 are not configured for phantom power.

Figure 19. MPAII phantom-power dip switches

Step 1

Locate the vertically mounted dip switches [10] (See Figure 16, above.) on the MPAII's back panel.

Step 2

The factory sets all dip switches ON (Figure 19, left). For microphones that require phantom power, the corresponding dip switch should remain in the ON position. If the microphones do not require phantom power, turn the corresponding dip switch to OFF.

PHANTOM POWER 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.

Step 4 — Auto Mix Switches

The auto-mix switches [12] (See Figure 20, below.) are located on the front panel immediately under the MIC Channel Level Controls [13].

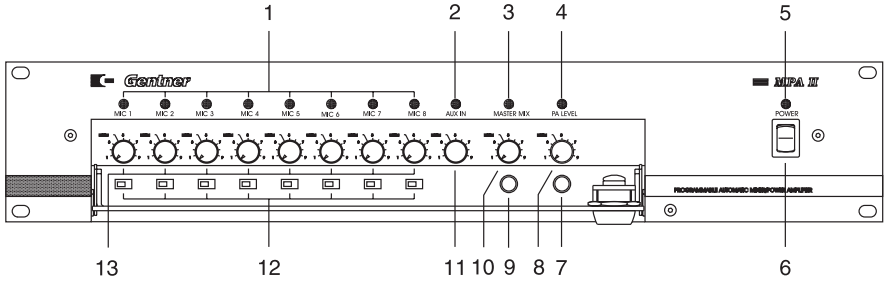


Figure 20. MPAII front-panel controls

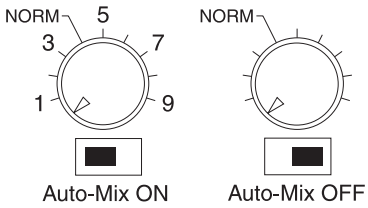


Figure 21. MPAII auto-mix switches

To place an individual microphone (1–8) in auto-mix mode, slide the corresponding auto-mix switch to the right (Figure 21, left).

To turn off automatic mixing for an individual microphone, slide the corresponding auto-mix switch to the left.

Step 5 — Baud Rate

The MPAII is shipped from the factory set at a baud rate of 9,600. If you are using the supplied setup software with a PC, most PCs operate at a baud rate of 9,600. If this is sufficient, go to Step 6 — Setting Levels (below).

If, however, you need to change the baud rate, follow the steps below:

Step 1
Locate the baud-rate dip switches [3] (See Figure 16, previous page.) on the MPAII's back panel.

Step 2
Set the dip switch to the desired baud rate using either the label located above the baud rate select switch (Figure 22, left).

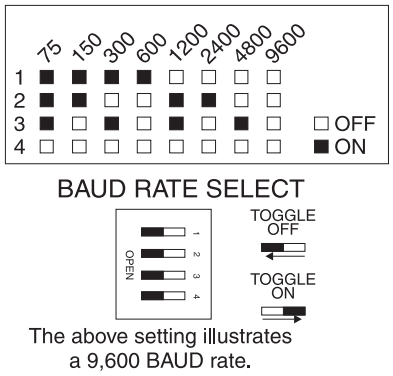


Figure 22. MPAII baud-rate dip switches

BAUD RATE NOTE:
If the dip switches are adjusted to change the baud rate, the unit will need to be power cycled for the baud-rate change to take effect.

Step 6 — Setting Levels

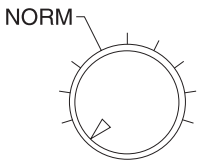


Figure 23. MPAII control norm position

Step 1
Put the MASTER MIX control [10] (Figure 20, above.) in the NORM position (See Figure 23, left.) and adjust the controls for MIC 1–8 so that, at each microphone, the MASTER MIX LED [3] flashes green during normal speech. Remember, if more overall gain is needed for the microphones, it is better to increase the levels of MIC 1–8 and keep the MASTER MIX level near the NORM position.

GATING LED NOTE:
The MIC 1–8 LEDs do not indicate audio level, but the microphone gate status.

Step 2
Adjust the AUX IN control [11] (See Figure 20, above.) so the MASTER

Installation Continued

MIX LED [3] (See Figure 24, below.) flashes green. Remember that the AUX INPUT LED [2] *does not* indicate audio level, but the presence of audio only.

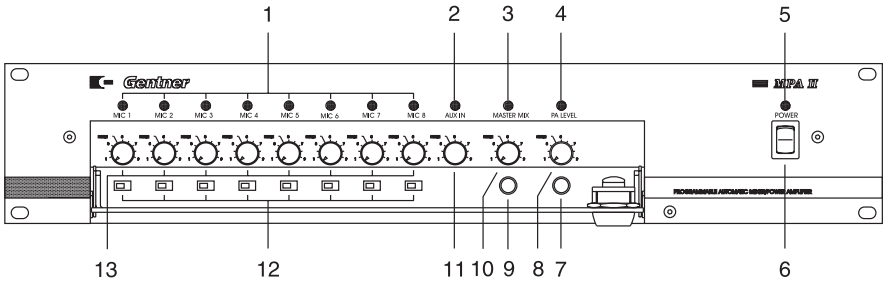


Figure 24. MPAII front-panel controls

Step 3
Adjust the level of the external audio source feeding into the power amplifier so that the PA LEVEL LED [4] flashes green. During normal operation, the LED may *occasionally* flash red on peaks.

Step 4
Adjust the PA LEVEL control [8] for a comfortable listening level. Remember, the PA LEVEL LED [4] indicates the level of *audio being received* from the external audio source. It *does not* indicate the level you set with the PA LEVEL control.

Program Setup

As shipped from the factory, the MPAII has 12 preset programs. One of these programs should suffice for most acoustic environments. However, should circumstances require, six of the 12 programs can be adjusted to meet specific needs or custom programs can be generated (see Custom Programming, Page 17).

Factory Default Programs

As shipped from the factory, the MPAII has 12 preset programs: six factory defaults which cannot be altered (indicated by a green PA LEVEL LED [4]) and six customizable programs (indicated by a red PA LEVEL LED [4]).

The six “red” programs, when shipped, are identical to the six “green” programs. We recommend trying each of the six green programs in your installation. In most cases, one of the green programs will be suitable for your application. However, should the green programs fail to produce the desired outcome, you can fine-tune one of the red programs by selecting the red program that most closely fits your needs and modifying it.

User-Configuration Programs

The MPAII can be programmed to solve specific problems in virtually any acoustic environment. Any of the parameters which control the MPAII’s operation can be changed and stored in any of the six red programs.

Step 1
To select one of the six green programs or one of the six red programs, press and hold the PROGRAM ENABLE button [9] (Figure 24, above). When this button is pressed, the MIC 1–8 LEDs [1] will momentarily light up, one at a time, indicating that the MPAII is ready to accept a new program; the LEDs will stop on the currently selected program, which will be be displayed

on the MIC 1–8 LEDs. The PA LEVEL LED [4] inidicates whether the available configuration programs are default or user configuration:

Green	Six factory-default programs
Red	Six user-configuration programs

While *holding down* the PROGRAM ENABLE button [9], press the PROGRAM SELECT button [7] to scroll through the programs one at a time. When the desired program appears, *release* the PROGRAM ENABLE button to load the program.

PROGRAM NOTE:
If the MPAII is turned off or loses power, the program that was selected when power was lost will automatically load when the power is restored.

Default Program Description

Below are brief descriptions of each of the green (default) programs. Gentner Communications suggests you try each one to find the one that best suits your environment. If none of the default programs is right for your particular situation, you can adjust one of the existing programs or create a new program using your own parameters (see Custom Programming, Page 17).

Green 1
This program is designed for the small-to-medium sized conference room where ambient noise levels are moderate (30–45dB SPL c weighted) and minimal or no acoustic treatment has been done to the room. When no one is talking, all microphones gate OFF, reducing feedback potential and ambient noise. This program works well in most applications.

Green 2
This program is designed for a room that has a better acoustic environment than the room described in Green 1. The Last-On Mode is ON to keep one microphone active at all times. This prevents the ambient noise "pumping" effect and helps make smooth transitions between two or more people. The gate ratio is lower than in Green 1, causing the mics to gate OFF at lower voice levels. The amount of off attenutation 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.

Green 3
In Green 3, the Last-On Mode is OFF, which causes all microphones to gate off when no one is speaking. The gate ratio is set at the 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.

Green 4
This program is identical to Green 1 except that the gate ratio is 3dB lower and the hold time is reduced to one-tenth of a second. The decrease in gate ratio causes the microphones to gate on easier when people begin speaking. Decreased hold time causes the microphones to gate off faster at the end of sentences. This program may be preferred to Green 1 in fast-paced discussions.

Program Setup Continued

Green 5

This program is designed for harsh conferencing environments. The Last-On Mode is OFF, which causes all the microphones to gate off when no one is speaking. Off attenutation is set at the relatively high level of 20. This makes it more difficult for voice as well as other sounds to gate 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 number of microphones is set at four, allowing only four microphones to be on at a time. This helps minimize echo and reverberation that the other location hears as well as reducing confusion when several people are speaking simultaneously.

Green 6

This program is also designed for harsh conferencing environments. The Last-On Mode is ON, causing one microphone to be on at all times. This reduces the apparent "pumping" sound when loud ambient noises are present. The maximum number of microphones is set at three, which allows only three microphones on at a time. This helps minimize echo and reverberation that the other location hears as well as reducing confusion when several people are speaking simultaneously.

Table 1. Default Program Parameters

Config Name	Green 1	Green 2	Green 3	Green 4	Green 5	Green 6
Default	1	2	3	4	5	6
Hold Time (tenths/second)	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 No./Microphones	6	6	6	6	4	3
Off Attenuation (dB)	15	12	12	15	20	20
Decay Rate	Slow	Medium	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
First Mic Mode	On	On	On	On	On	On

Custom Programming

To create a program, or to modify an existing red program, you need to use a PC with DOS version 3.1 or later. Supplied with the MPAII is a 3.5-inch diskette containing the MPAII configuration software. This software allows you to change any of the red (user configuration) program parameters. We recommend that, before you try to create your own programs, you become familiar with the Appendix C, Programming Tutorial, Page 30.

The MPAII programming software can be run from the floppy disk or your PC's hard drive. If you plan to copy the files onto your hard drive, you should have at least 1MB of free disk space available. The program itself is less than 100kB, but you will want to allow space for saving the programs you create. We recommend that, if you plan to copy the files to your hard drive, you create an MPAII directory on that drive so the MPAII II files will not get lost among the other files in your root directory. Refer to the documentation that came with your PC's operating system for information on creating a directory and copying files to it.

Running the MPAII Programmming Software

From the Hard Drive
Unless you added the name of the MPAII directory to your AUTOEXEC.BAT file, you will need to launch the program from your MPAII directory. From the DOS prompt, type CD followed by the name of the directory in which you have copied the MPAII software files, and press <ENTER>.

Example: C:>cd mpaII <ENTER>

The DOS prompt should return, listing the MPAII subheading:

C:\MPAII>

From a Floppy Drive
Insert the MPAII programming diskette into your 3.5-inch drive. At the DOS prompt, type a: and press <ENTER>.

At the next DOS prompt (A:>), type mpaii and press <ENTER> to begin the program.

PROGRAMMING SOFTWARE NOTE:
This program uses default values of 9,600 baud on port COM 1. Most PCs operate at that value.

If your PC requires a different baud rate to function with the MPAII, use the following parameters when typing mpaii to begin your program:

mpaii -s(speed) -p(port)

PARAMETER NOTE:
All parameters following mpaii must be typed in lower case.

Speed. Set the serial port speed. Options available are 75, 150, 300, 600, 1200, 2400, 4800 and 9600 (default).

Port. Set the desired COM port. Options are 1 (default), 2, 3 and 4.

Example: C:>mpaii -s2400 -p2 <ENTER>

Custom Programming Continued

Next, the title screen appears (Figure 25, below). Press any key to advance beyond it.

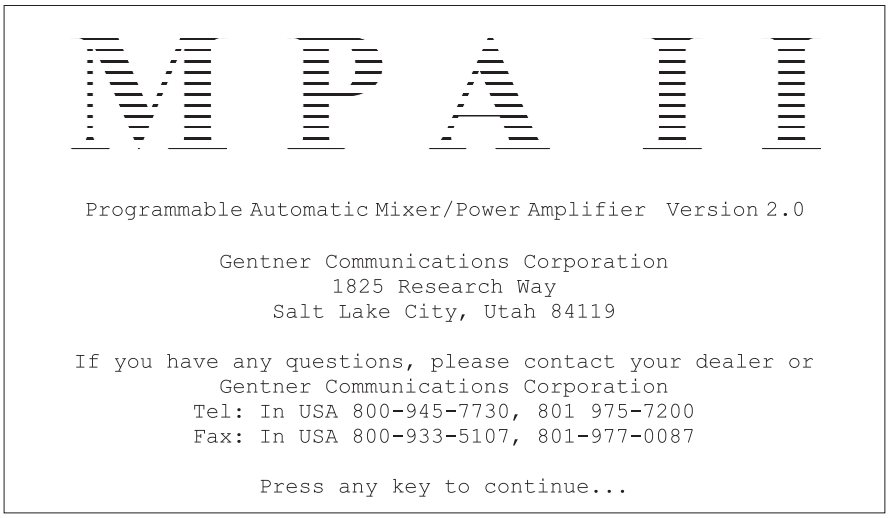


Figure 25. MPAII programming software title screen

The MPAII II is easy to program, but background information may be helpful. The main screen shows the six red user-configurable programs. These are identical to the six green default programs (until you alter some of their parameters). The arrow keys will move you from one field to another, and the field you are in will be highlighted. The space bar and the backspace key will allow you to change values within highlighted fields.

Understanding the Main Screen

The MPAII 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 beneath the headings Red 1 through Red 6. When you load a configuration file, the six program files associated with the configuration are loaded. When you load a program file, only that particular file is loaded. There are eight basic parts to the main screen (See Figure 26, below.): config name, MPAII location, program name, parameter values, function keys, current drive and directory, prompt line and program parameters.

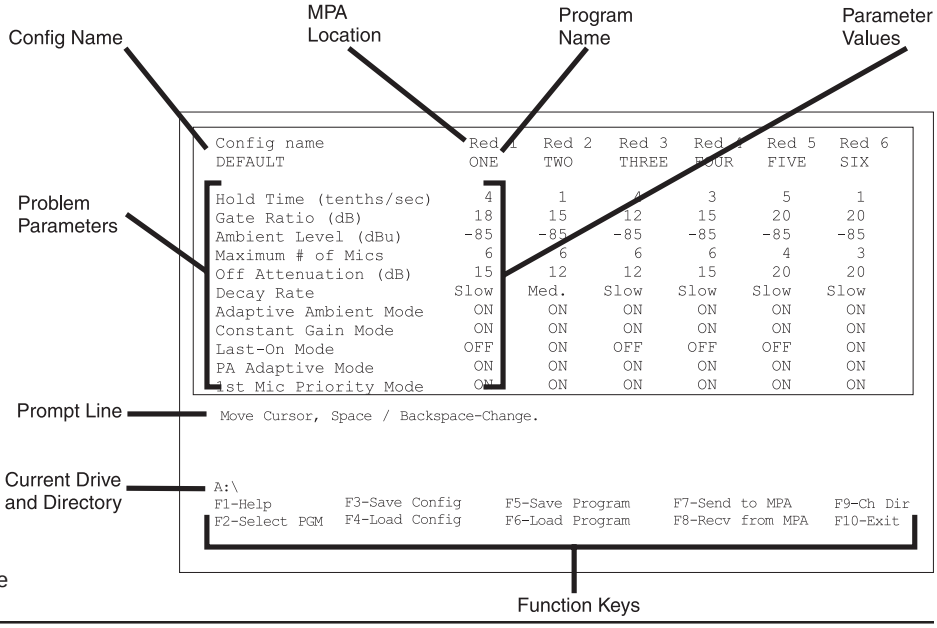


Figure 26. MPAII programming software main screen

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

MPAII Location
Location in the MPAII where the program will be stored.

Program Name
The name of the current program file. A program file contains the parameters for one program.

Parameter Values
The current program's parameter values.

Function Keys
Keys strokes that allow you to perform various functions such as load and save files to and from the disk, and send and receive programs to and from the MPAII. See Programming Functions (below) for more information.

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

Prompt Line
Listing of shows valid keyboard actions.

Program Parameters
Program parameter labels.

Programming Functions

All function keys are supported by the MPAII programming software. Below are descriptions of the function-key actions:

Online Help <F1>
Press <F1> to bring up an online-help screen on the highlighted parameter. The online-help screen gives a brief description of the highlighted parameter, 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.

Select Program <F2>
Press <F2> to bring up the program-selection screen. This allows you to select which program will be active on the MPAII. To choose one of the 12 configuration programs, use the up and down keys to select a program and press <ENTER>. Press <F10> to return to the main menu.

SELECT PROGRAM NOTE:
This function does not send the parameter values of the selected program to the MPAII. If you have changed the parameter values on the main screen, you must first send the modified programs to the MPAII using <F7>.

Save Configuration <F3>
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 eight 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

Custom Programming Continued

Save Program (below).

Load Configuration <F4>
In the configuration name location, type the name the configuration file you wish to load. You can also press <Shift>+<F1> to bring up a listing of the configuration files in the current drive and directory. After you have chosen the program name, press <F4>. This causes the six program files associated with the configuration file to be loaded from the disk. The screen displays "Reading filename ..." while loading the configuration programs.

Save Program <F5>
To save a program to disk, highlight 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.

Load Program <F6>
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 loads the selected program file.

Send to MPAII <F7>
Press <F7> to send all six programs to the MPAII through the serial COM port. After completing editing/programming procedures, the new parameters need to be sent to the MPAII. All six user-configuration programs are sent to the MPAII at one time. To send the configuration programs press <F7>. The MPAII front panel LEDs will flash, indicating that the MPAII is receiving the programs. A window will pop up showing the information being sent to the MPAII. After all programs have been sent, the LEDs will stop flashing and the computer screen returns to the main menu.

Receive from MPAII <F8>
Press <F8> in the main menu to receive all six programs from the MPAII through the serial COM port. The LEDs on the front panel flash indicating the MPAII 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.

RECEIVE NOTE:
Program names are not stored in the MPAII. When you receive programs from the MPAII, the program names will remain unchanged on the menu screen.

Change Directory <F9>
Press <F9> to change to a different drive and directory. When you press this key, a screen comes up that shows the current drive and directory and any subdirectories 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>. If no other directories are found on that drive, an error message will appear on the screen stating that no other directories were found.

Exit <F10>
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. Exiting returns control of the computer back to DOS.

Program Parameters

There are eleven parameters with which an MPAII can be programmed: adaptive ambient mode, ambient level, constant gain mode, decay rate, first-mic priority mode, gate ratio, hold time, last-on mode, off attenuation and PA adaptive mode.

Adaptive Ambient Mode
The adaptive ambient mode can be turned on and off (Figure 27, below). We recommend that you keep it ON. If the ambient noise in the room is constantly changing and the MPAII is unable to track properly, turn this mode OFF and set the ambient level manually using ambient level.

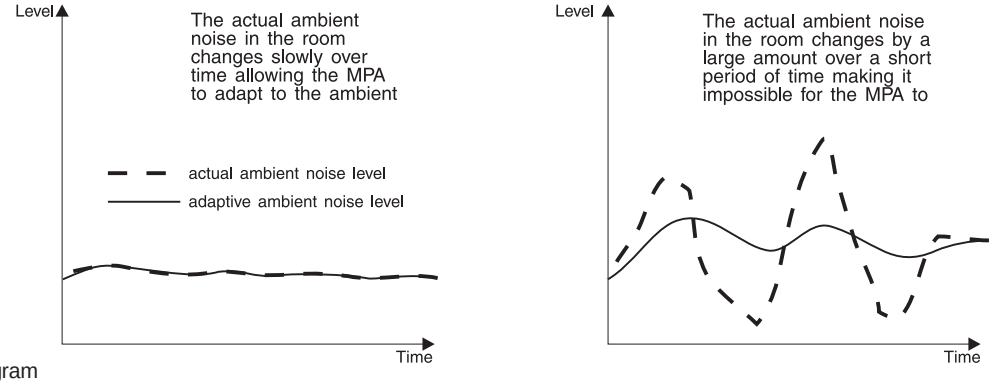


Figure 27. Adaptive ambient diagram

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 -105dBm to -39dBm. You can empirically find the ambient level by following the steps below.

Step 1. Set the gate ratio to zero (write down the current value).

Step 2. Set the ambient level to -72 and press <F7>.

Step 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:

$$\frac{(-72)+(-39)}{2}=55.5$$

Step 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:

$$\frac{(-72)+(-105)}{2}=88.5$$

Custom Programming Continued

Step 5. Repeat steps 3 and 4 until you find the threshold between when the microphones are on and off.

Step 6. Reset the Gate Ratio to the original value and press F7.

Constant Gain Mode
Constant gain corrects for increased output level when more than one microphone is gated on. As microphones gate on, the MPAII reduces the level according to the number of active microphones. This mode can be turned on/off. It is recommended that you leave this mode turned ON.

Decay Rate
This determines how fast a microphone gates off after the hold time expires (Figure 28, below). Three options are available: slow, medium and fast. If your room has 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.

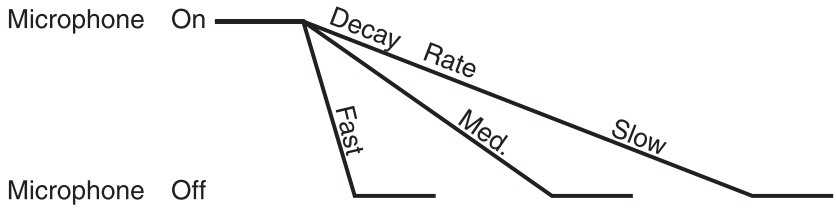


Figure 28. Decay rate diagram

First Mic Priority Mode
When the first-mic priority mode is active, it reduces the chance of more than one microphone gating on when only one person is speaking. This helps maximize audio intelligibility. It is recommended that this setting be left ON. When turned off, usually two or more microphones gate on when only one person speaks. However, when this parameter is turned on, one person will usually be able to gate on only one microphone. It does this by determining the audio level received by all microphones when the first microphone is gated on. This audio level is then used as the ambient level for all other microphones.

Gate Ratio
This specifies how much louder the microphone audio level must be above the ambient level before a microphone gates 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 0–50dB in 1dB increments. Set this value as low as possible without the microphones gating on from room noises. If the microphones frequently gate on when no one is speaking, increase the gate ratio.

Hold Time
This determines the length of time that a microphone remains on after the microphone audio level drops below the gate-ratio threshold (Figure 29, next page, top). Values range from 0.1–3.0 seconds in .1 second increments. Setting this value too low may cause the microphones to gate 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 0.1–0.5 seconds.

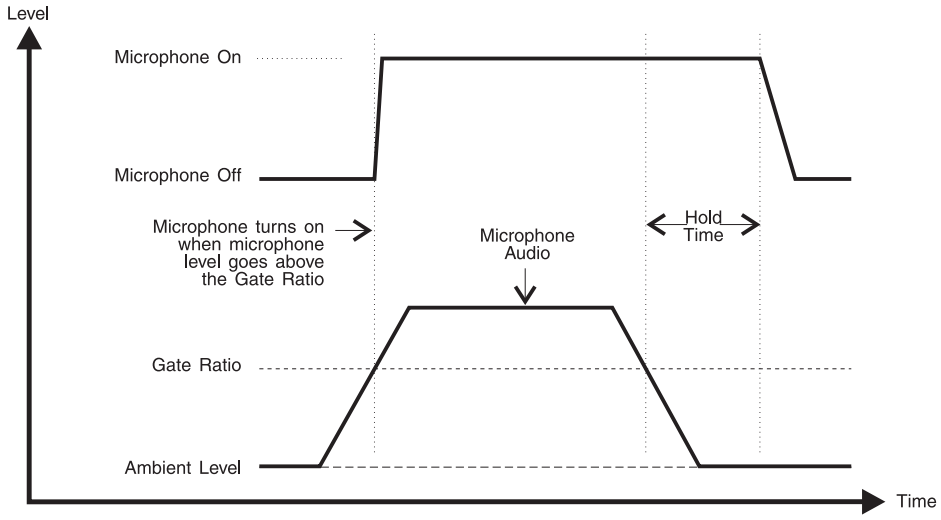


Figure 29. Hold time diagram

Last-On Mode
When last-on mode is active, the last microphone gated on stays on until another microphone gates on. We recommend leaving this mode ON, since it makes smoother transitions between microphones as they gate on/off.

Maximum Number of Microphones
This parameter sets the maximum number of microphones that can be on at any one time. Values range from one to eight microphones. If first-mic priority mode is active, then the recommended maximum number of microphones is eight. If first-mic priority mode is OFF, you may need to reduce the maximum number of microphones to a lower value.

Off Attenuation
This sets the amount of level reduction applied to a microphone when it is not on (Figure 30, below). 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/off as the background noise is reduced. Off attenuation is measured in dB and ranges from 0–50dB. The recommended starting setting is 15dB.

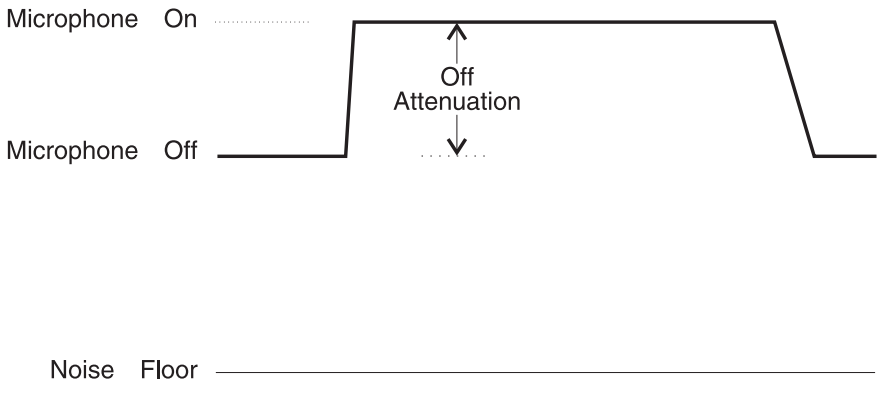


Figure 30. Off attenutation diagram

Custom Programming Continued

PA Adaptive Mode

When the PA adaptive mode is active, the MPAII recognizes how much speaker audio is picked up by the microphones (Figure 31, below). The mixer uses this level as the ambient level when audio is present at the power amplifier. This prevents speaker audio from gating on microphones while still allowing people in the room to gate on microphones as they speak.

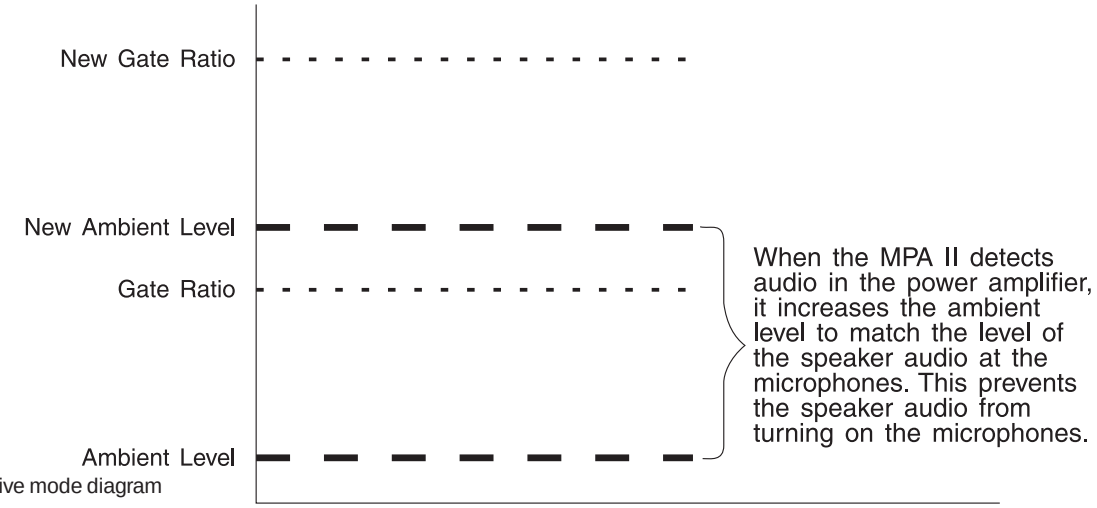


Figure 31. PA adaptive mode diagram

Specifications

MPAII

Dimensions
19"/48.3cmW x 1.75"/4.45cmH x 11"/27.9cmD

Weight
12 lbs./5.4 kg dry 15 lbs./6.8 kg shipping

Connectors

POWER:	Fused multipkle voltage module, selectable
COM PORT:	RS232; 75-9,600 baud, selectable
LOGIC OUTPUT:	DB15 male; Eight channels, open collector, 40Vmax, 400mA each
AUX INPUT:	Phono; -10dBu nominal, adjustable, 10Kohms, unbalanced
AUX INPUT:	Phono; -10dBu nominal, adjustable, 1Kohms, unbalanced
MASTER OUTPUT:	3-pin male XLR; +4dBm nominal, adjustable, 600ohms, balanced
MIC INPUTS:	3-pin female XLR; -55dBu nominal, adjustable; 1.5Kohms, balanced, bridging; reconfigurable, microprocessor-controlled gating; 0.1–3 second adjustable hold time; 50dB to -1dB adjustable off attenuation; 30V, individual channel selectable phantom power

SPEAKER:	Spring-loaded wire clamps
PA INPUT:	3-pin female XLR; +4dBm nominal, adjustable; 20Kohms, balanced; bridging
PA OUTPUT:	3-pin male XLR; +4dBm nominal, 600ohms, balanced

Power Requirements

100/120/220/240Vac switchable; 50/60Hz

Audio Performance: Mic Mixer

Frequency Response
20Hz to 20kHz ±1dB

Signal-to-Noise Ratio
>60dB ref., -55dBu input, +4dBm output

Total Harmonic Distortion
<.1 percent

Audio Performance: Power Amp

Frequency Response
+/- 1dB, 50Hz–20kHz; +/-3dB, 20Hz–20kHz

Signal-to-Noise Ratio
>80dB ref., +4dBm input, 15W into 8ohms output

Total Harmonic Distortion
<0.1 percent

Power Amp Output

2x15W into 8ohms

Operating Temperature

32–110° F

Specifications are subject to change without notice.

Warranty

Gentner Communications Corporation (Manufacturer) warrants that this product is free of defects in both materials and workmanship. Should any part of this equipment be defective, the Manufacturer agrees, at its option, to:

A. Repair or replace any defective part free of charge (except transportation charges) for a period of one year from the date of the original purchase, provided the owner returns the equipment to the Manufacturer at the address set forth below. No charge will be made for parts of labor during this period;

B. Furnish replacement for any defective parts in the equipment for a period of one year from the date of original purchase. Replacement parts shall be furnished without charge, except labor and transportation.

This Warranty excludes assembled products not manufactured by the Manufacturer whether or not they are incorporated in a Manufacturer product or sold under a Manufacturer part or model number.

THIS WARRANTY IS VOID IF:

A. The equipment has been damaged by negligence, accident, act of God, or mishandling, or has not been operated in accordance with the procedures described in the operating and technical instructions; or,

B. The equipment has been altered or repaired by other than the Manufacturer or an authorized service representative of the Manufacturer; or,

C. Adaptations or accessories other than those manufactured or provided by the Manufacturer have been made or attached to the equipment which, in the determination of the Manufacturer, shall have affected the performance, safety or reliability of the equipment; or,

D. The equipments original serial number has been modified or removed.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, APPLIES TO THE EQUIPMENT, nor is any person or company authorized to assume any warranty for the Manufacturer or any other liability in connection with the sale of the Manufacturer's products.

Manufacturer does not assume any responsibility for consequential damages, expenses, or loss of revenue or property, inconvenience, or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

In case of unsatisfactory operation, the purchaser shall promptly notify the Manufacturer at the address set forth below in writing, giving full particulars as to the defects or unsatisfactory operation. Upon receipt of such notice, the Manufacturer will give instructions respecting the shipment of the equipment, or such other matters as it elects to honor this warranty as above provided. This warranty does not cover damage to the equipment during shipping and the Manufacturer assumes no responsibility for such damage. All shipping costs shall be paid by the customer.

This warranty extends only to the original purchaser and is not assignable or transferable.

Gentner Communications Corporation, 1825 Research Way, Salt Lake City, Utah 84119

FCC Part 15 Compliance

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/her own expense.

Changes or modifications not expressly approved by Gentner Communications Corporation could void the user's authority to operate the equipment.

Safety Information

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

Appendix A: Glossary

In order to gain a better understanding of the MPAII 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 ambient noise level in the room and changes the threshold level at which a microphone gates 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 gating on due to ambient noise.

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

Attenuate — To reduce the level of a signal.

Constant Gain — This portion of the mixer corrects for output increases due to multiple microphones gating on. Constant gain will reduce the overall level at the mixer output 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 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 Microphone Mixers — Gating microphone mixers have the ability to turn on and off microphones. 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 gated on. This improves the intelligibility and reduces the risk of feedback in the room. With the MPAII, this setting is user-selectable from one to eight.

When all microphones are gated 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.

Gating Threshold — This is the voice (input) level that must be reached before a microphone will gate 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 gating off with brief pauses during speech.

Appendix A: Continued

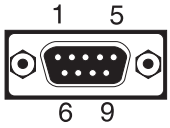
Non-Gating Microphone Mixers Non-gating microphone mixers are the simplest of the three types of mixers. All mixing levels are manually set and all microphones stay on at all times. Mixing levels do not automatically adjust to compensate for low audio levels. Once mixing levels are adjusted, they remain 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 and will decrease the intelligibility of the room audio and increase the risk of feedback.

Non-gating microphone mixers work best in rooms that are acoustically treated. When the room is acoustically treated, ambient noise and reverberation are reduced enough to minimize the impact of the overall sound quality. 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.

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

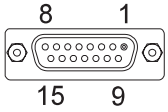
Appendix B: Connector Pinouts

Table 2. RS232 COM Port Pinout



Pin Number	Control	Pin Number	Control
1	No connection	6	No connection
2	TXD	7	No connection
3	RXD	8	No connection
4	No connection	9	No connection
5	Ground		

Table 3. Logic Output Pinout



Pin Number	Control	Pin Number	Control
1	Mic 1	9	Aux In
2	Mic 2	10	Ground
3	Mic 3	11	Ground
4	Mic 4	12	Ground
5	Mic 5	13	Ground
6	Mic 6	14	Ground
7	Mic 7	15	Ground

Appendix C: Programming Tutorial

Introduction

Traditional analog gated and automatic microphone mixers are set up by adjusting trim pots and switches, and changing jumper settings. These setup adjustments usually require removing the mixer cover and making adjustments on the actual circuit board. This method of setting up a system is cumbersome, making different setup configurations very difficult to configure.

The MPAII is designed to allow for simple, easy and instantaneous changes to the setup parameters. This allows you to try many different configurations to decide which one is best suited for your particular needs. Furthermore, using a PC to fine tune your system makes your setup exact, eliminating guesswork such as whether your trim pot is set at the 10 o'clock or 11 o'clock position.

The following tutorial teaches you how to use your provided MPAII programming software. Please take a moment to go through the following tutorial to grasp some key concepts.

Programs and Configurations: Overall Concepts

The MPAII programming software can be run from floppy disk or your PC's hard drive (1MB free hard-disk space recommended). Running the MPAII programming software is detailed in Program Setup (Page 14). The MPAII has 12 programs built into it: six factory default programs that cannot be changed (Green 1–6) and six customizable programs (Red 1–6). Most have found that one of the default programs provide excellent results but, in rare occasions, differing parameters are required. These parameters can be programmed into the MPAII as illustrated in this tutorial.

The red programs come with factory settings identical to the green so that you can select the red equivalent to the green program that comes closest to your needs, and then fine tune or customize it to those specific needs.
The only way to change the parameters or customize your system software is through an RS232 cable connecting your PC (with running MPAII programming softare) and MPAII COM PORT.

The software allows you to create many programs that can be loaded into Red 1–6 and saved to your hard disk. You may also save groups of programs (Red 1–6) in "configurations."

Configurations may contain any combination of programs, and programs may be used in any configuration.

CONFIGURATION NOTE:
Configuration files and program files are saved using different extensions: .cfg *for configuration files, and* .mpa *for program files. This allows you to mix and match any combination of programs and configurations.*

Scenario 1
Application: Panel discussion in a hotel conference room
Action: Most effective programs are determined and saved as the configuration HOTELS.CFG; each of the programs might have names such as SMPANEL.MPA, LGPANEL.MPA, etc.
Benefit: Every time this application arises, the HOTELS.CFG configuration

Appendix C: Continued

file can be loaded, saving time and resources.

Scenario 2
Application: Distance learning
Action: Discover that the LGPANEL.MPA program (already configured for hotel panel discussions) is ideal; save LGPANEL.MPA into a second configuration, DISTLRN.CFG.
Benefit: Every time this application arises, the DISTLRN.CFG configuration file can be loaded, saving time and resources. Also, work saved from hotel panel-discussion situation was easily accessible for use in distance-learning scenario.

Programs

Take a few minutes, using the arrow keys, to learn how to move around in the program. Move from field to field as well as from parameter to parameter until you get a feel for it. It is important that you know how to get to the configuration names, as well as to each of the program names. You may also use the <Tab> and <Shift>+<Tab> keys to move around on the screen.

To change a program parameter, use the <Space Bar> and <Backspace> keys. You may also use the number keypad where number values are assigned to a parameter, though the program will only accept numbers within a given range for that field.

Changing and Saving a Program Name
Step 1. Using the arrow keys, move to the Red 3 program column, then move the cursor up to the program name (Figure 32, below). Type in TUTOR in place of the current title (THREE).

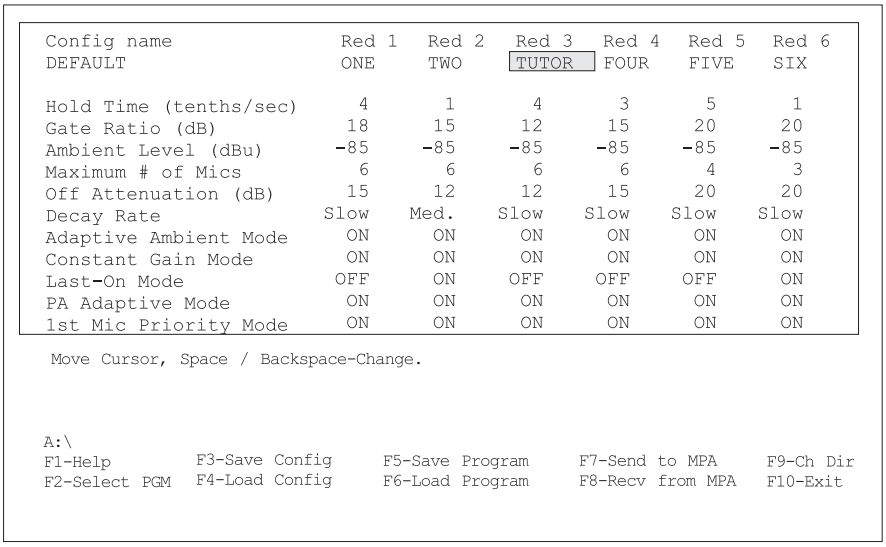


Figure 32. Programming screen

Step 2. Save the program by pressing <F5>. You have now saved program 3 under the file name TUTOR.

Step 3. While in the Red 3 (TUTOR) column, move the cursor down to select different parameters and change the parameters in the program by using the <Space Bar> and <Backspace> keys.

Step 4. Now save the changes to TUTOR by pressing <F5> again. You will be prompted as to whether you would like to overwrite the old program. Press the <Y> key to save the new parameters under the TUTOR program name.

You have just renamed, modified, and saved (created) a new program named TUTOR. For practice, reload the program titled THREE.

Loading Program Files
Step 1. Move the cursor to the Red 3 column title (which is now TUTOR).

Step 2. Press <Shift>+<F1> at the same time. This will place you in a program files menu screen.

Step 3. Using the cursor, select THREE and press <ENTER>. This replaces the TUTOR program screen with the THREE program screen. Press <F6> to load the program. The program is now back to the original THREE you began with.

If you already know the name of the program file you wish to load, there is a short cut:

Step 1. Move the cursor to the Red 3 column.

Step 2. Type TUTOR.

Step 3. Press <F6> to load the program. The TUTOR program is now loaded.

Configurations

Configurations are simply a group of program files under a group configuration file name.

Saving Configurations
Save a new configuration as TUTORIAL. This configuration file will include the new TUTOR program file we just created under Red 3 (Figure 33, below).

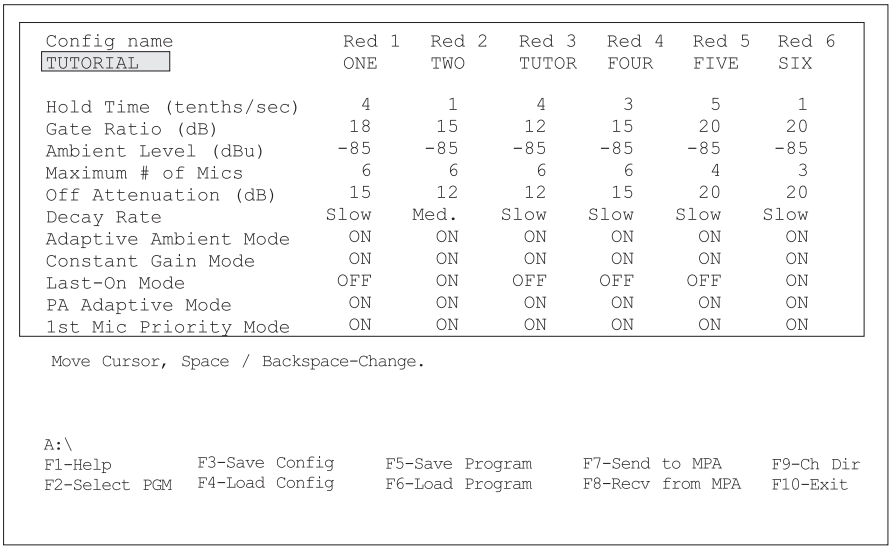


Figure 33. Configuration programming screen

Appendix C: Continued

Step 1. Move the cursor to highlight the existing configuration name (most likely DEFAULT; Figure 33a, below).

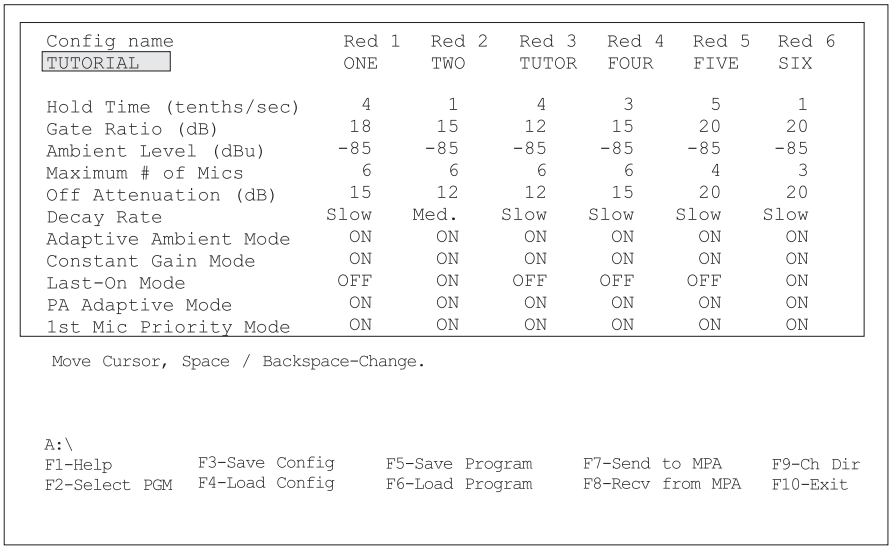


Figure 33a. Configuration programming screen

Step 2. Type TUTORIAL over the existing configuration name.

Step 3. Press <F3> to save this configuration under the file name TUTORIAL.CFG.

Loading a Configuration
Reload the default configuration (DEFAULT).

Step 1. Highlight the configuration name (which is now TUTORIAL).

Step 2. Press the <Shift>+<F1> keys at the same time. This will place you in a configuration files menu screen. Available configuration names are shown on the screen.

Step 3. Use the cursor to select DEFAULT.CFG and press <ENTER>. This places you back into the program screen with DEFAULT where TUTORIAL used to be; the DEFAULT configuration has been selected, but if you look over at RED 3, you will notice that TUTOR is still showing under RED 3. Do not be alarmed, you have only selected the configuration file you want to load. It has not yet been loaded. You must press <F4> to load the configuration. Once <F4> has been pressed, the original DEFAULT configuration will be loaded and the program file under RED 3 should now read THREE.

CONFIGURATION SHORT CUT NOTE:
As with the program selection options you just learned, you may also simply enter the name of the configuration file you want to load. But remember, whether you choose to use the <Shift>+<F1> option in either the program files menu or the configuration files menu, pressing <ENTER> only selects *the file you wish to load. Whether you use the <Shift>+<F1> option, or simply type in the file you wish to load, you must* also *press <F6> (for program file loads) or <F4> (for configuration file loads) for your selection to take effect.*

Changing Directories

If you have more than one directory on your hard drive from which your MPAII software is operating, the following information will be helpful. If you do not have more than one directory on that drive, you will receive an error message, and you will not be able to perform the following two steps.

Step 1
Press <F9>.

Step 2
Use the arrow keys to select the directory to which you wish to load and save files. Once the directory has been selected, the program will send you back to the configuration screen, with the new directory in place.

Changing the MPAII Operating Program

As shown earlier, you can change the operating program by simply pressing the program (left) button behind the MPAII's locking front panel and selecting the desired program with the select (right) button. You may also change the operating program using the supplied software as follows:

Step 1
Press <F2> to bring up a program selection menu screen.

PROGRAM SCREEN NOTE:
This screen deos not tell you what program is currently running. That can only be determined by holding in the left program button under the locking front panel.

Step 2
Use the arrow keys to select the program you want the MPAII use.

Step 3
Press <F10> to return to the main program again.

Downloading/Uploading MPAII Configurations

Downloading
You can download a configuration to the MPAII at any time by pressing the <F7> key. The configuration shown on the screen is then sent to the MPAII. This process takes a few seconds and the front lights on the MPAII will flash during the process. The MPAII will operate normally during the download process.

Step 1. Load the TUTORIAL configuration file (or any other configuration you like).

Step 2. Press <F7> to send the configuration to the MPAII. The MPAII will now be running under the configuration titled TUTORIAL.

Uploading a Configuration
There may be times when you will want to see what the configuration of the MPAII is. To do this, follow these steps:

Step 1. Press <F8> to receive the current running configuration from the

Appendix C: Continued

MPAII. The received configuration should now be displayed on the screen.

***UPLOADING NOTE**:*
Please note that the program names and configuration names have not changed. This could be both confusing and dangerous. If you were to save the configuration now, you would save it under the configuration and program names shown, overwriting the files you had on the screen at the time you pressed <F8>. However, it will not overwrite until you choose to.

Scenario 3
Application: Working with the HOTELS configuration
Action: Upload a teleconferencing configuration to see what is on the MPAII. You save the configuration, inadvertently overwriting your HOTELS configuration with all of the program parameters uploaded from the MPAII
Prevention: After uploading a configuration from the MPAII, exit the program without saving your changes, then restart your configuration program and return to where you left off

Fine Tuning With Your PC

Using the PC to fine tune your MPAII is fast, effective and simple.

Step 1
Load the configuration you want to start with (most likely DEFAULT).

Step 2
If you are not going to use any existing program names, rename all the program names, then save them. This will ensure that you do not overwrite files you may want to use in the future.

Step 3
Rename the new configuration and save it under a new name. This will ensure that you do not overwrite files you may want to use in the future.

OVERWRITING NOTE:
If you fail to perform Steps 1–3, you will inadvertently overwrite existing file names that you may want to use in the future.

Step 4
Select the operating program you want to change by pressing <F2>, then select the program. For simplicity's sake, we will use Red 1.

Or

You may move the cursor over to the column for RED 1 using the <Tab> or <Space Bar> keys.

Step 5
Change desired program parameters.

Step 6
Press <F7> to load the modified configuration and program into the MPAII.

Step 7
Test the MPAII's performance with the newly downloaded configuration.

Step 8
Repeat Steps 5–7 until you achieve desired results.

Step 9
Highlight the configuration name and press <F3> to save the configuration to your hard drive.

Appendix D: Applications

Teleconferencing

As teleconferencing becomes a more popular way of conducting "face-to-face" electronic meetings, sophisticated equipment will make the difference between an average (or even frustrating) meeting and a high class, perfectly managed meeting. Executives at all levels appreciate the carefree ease of use that the MPAII provides for electronic meetings.

The benefit derived by using the MPAII in teleconferencing is its ability to use multiple, gating microphones. This keeps unused microphones closed, preventing extra noise, reverberation, echo, etc. When someone speaks at the "closed" microphone, it will automatically gate on for the period it is in use (if properly programmed).

When the MPAII is used at multiple sites, and linked through telephone connections, each site can program its MPAII to accommodate the type of conference (audioconference or videoconference) and the size of the conference room. The MPAII can be easily programmed to tailor each system to the application. The program allows you to specify: adaptive ambient mode, ambient level (dBu), constant gain mode, decay rate, first-mic priority mode, gate ratio (dB), hold time (tenths/a second), last-on mode, maximum number of microphones, off attenuation (dB) and PA adaptive mode.

With the LOGIC OUTPUT connector, electronic equipment such as cameras, signs, etc. can be managed, performing functions necessary for successful conferencing.

Other Gentner products frequently used with the MPAII in this type of application include the TI7200 Teleconferencing Interface, G3200 Super Hybrid, GT300 Group Teleconferencer, GT700 Group Teleconferencer and GT724 Group Teleconferencer (Figure 34, below).

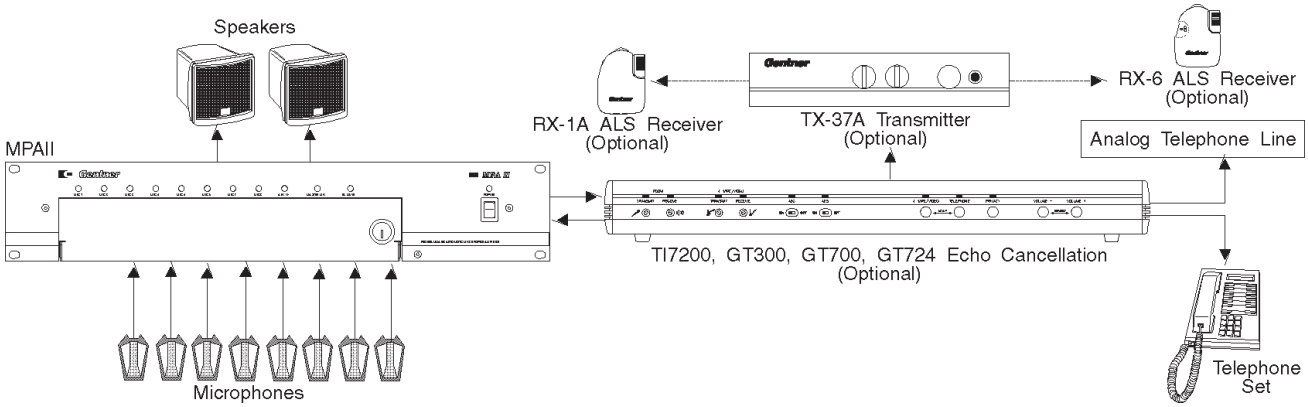


Figure 34. MPAII teleconferencing application block diagram

Each of the teleconferencers connects your telephone line into your conference, enhancing your conference with echo cancellation, echo suppression, and cleaner, clearer audio quality.

Appendix D: Continued

Also commonly used in a teleconferencing scenario are Gentner's Assistive Listening System (ALS) products: RX-1A Assistive Listening Receiver, RX-6 Assistive Listening Receiver, TX-37A Transmitter.

For more information on these products, contact Gentner Communications.

Talk Shows

Talk shows can be conducted over the radio, broadcast by television or maintained locally within a meeting area. Sometimes, talk shows are conducted at two or more locations and linked together by telephone.

However you do it, the MPAII will handle the microphone portion of the show. Other Gentner products such as the TI7200 Telephone Interface, GT300 Group Teleconferencer, GT700 Group Teleconferencer, GT724 Group Teleconferencer or G3200 Super Hybrids can be used to provide the telephone interface, depending on the configuration. Also, Gentner's TS612 Telephone System can perform the telephone-line handling itself (Figure 35, below).

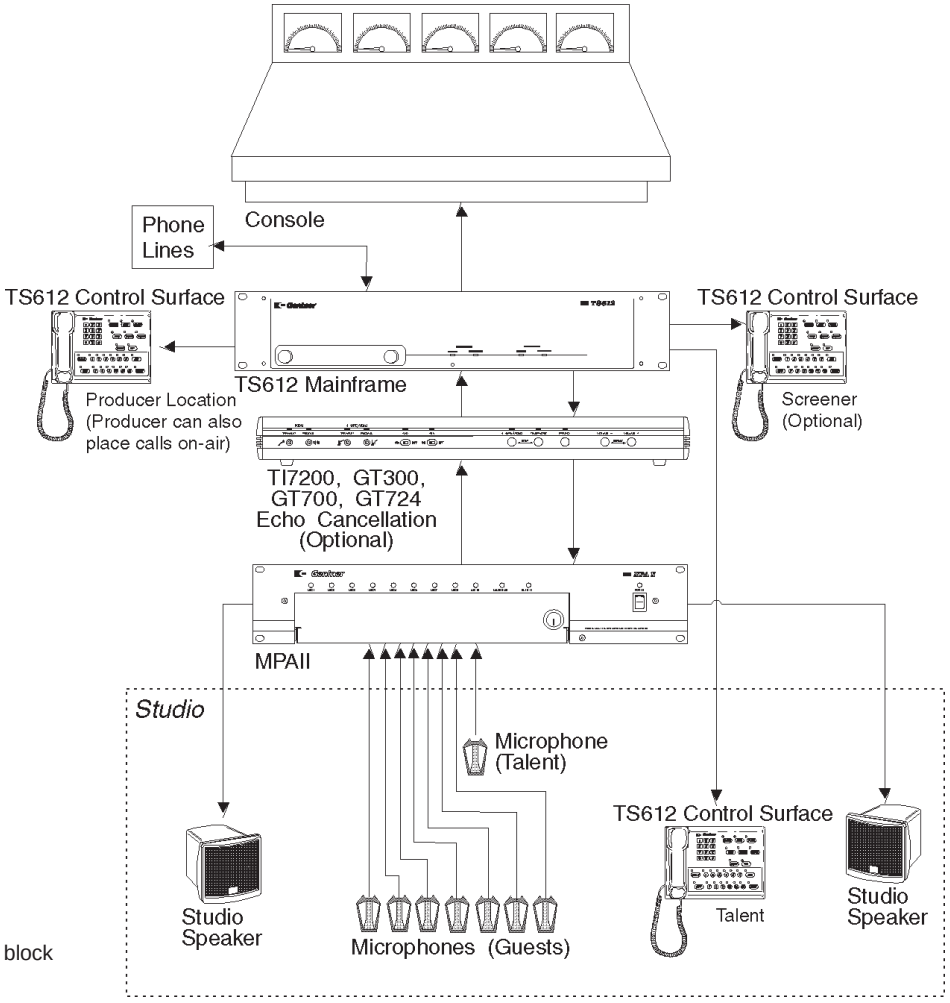


Figure 35. MPAII talk show application block diagram

Distance Learning

The demand for teaching institutions to ensure quality education for students at multiple and distant locations has created an increasing need for quality equipment to meet various specifications and setups. The MPAII, when used in conjunction with a telephone interface and other equipment that provides echo cancellation and echo suppression, meets that need.

Figure 36 (below) illustrates one common setup distance-learning configuration using the following Gentner equipment: MPAII, TS612 Telephone System and TI7200 Telephone Interface or GT300 Group Teleconferencer or GT700 Group Teleconferencer or GT724 Group Teleconferencer or G3200 Super Hybrid

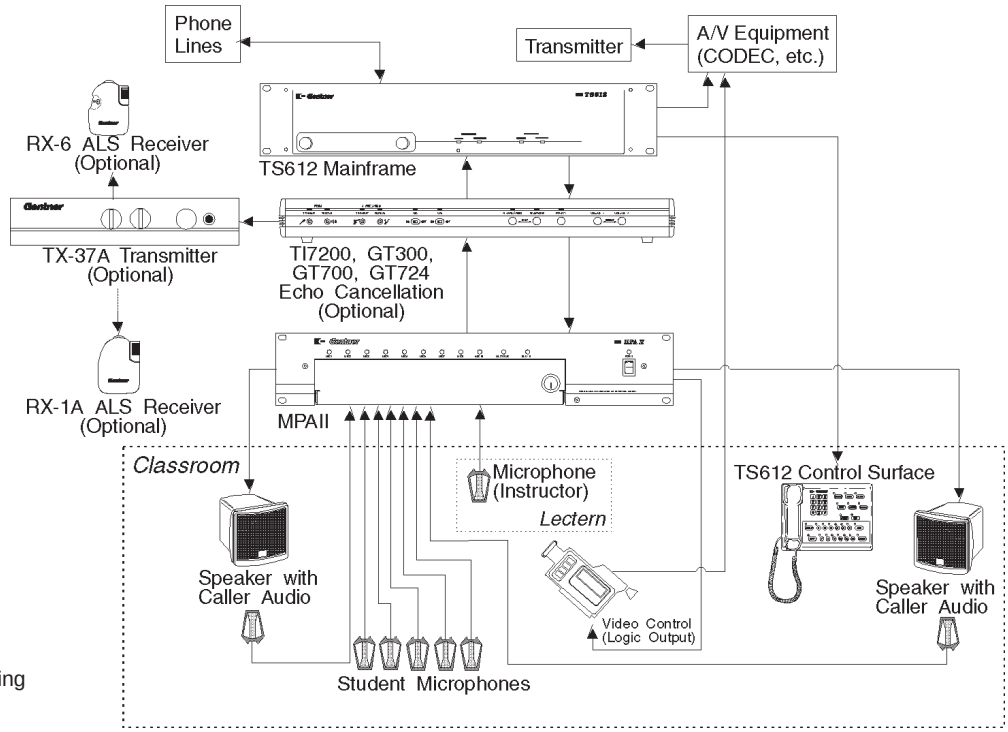


Figure 36. MPAII distance-learning application block diagram

This unique combination allows the lecturer full control when taking incoming calls from the various distant locations. The caller audio is easily transmitted back to all participants at all locations, allowing them full interactive communication for the entire lecture.

Because of room environments, speakers and microphones your application may require echo cancellation. For help determining if echo cancellation is necessary, contact Gentner Communications.

Courtrooms and Public Meeting Rooms

Sophisticated courtrooms use microphones at the attorney stands or desks, the judicial bench and the witness stand. The MPAII can be used successfully in this and other types of forums and public meeting rooms where multiple microphones are used for audience and panel participation.

Because this application requires multiple microphones, the MPAII's automatic gating feature and preset or programmable software setup helps control the microphones for optimum audio quality.

Appendix D: Continued

Where only one site needs to be monitored through one or more MPAIIs, other equipment used in previously described conferencing applications is not necessary. If your courtroom application requires communication with an off-site location, the configuration diagramed below (Figure 37) is a possible setup using Gentner equipment for multisite communication.

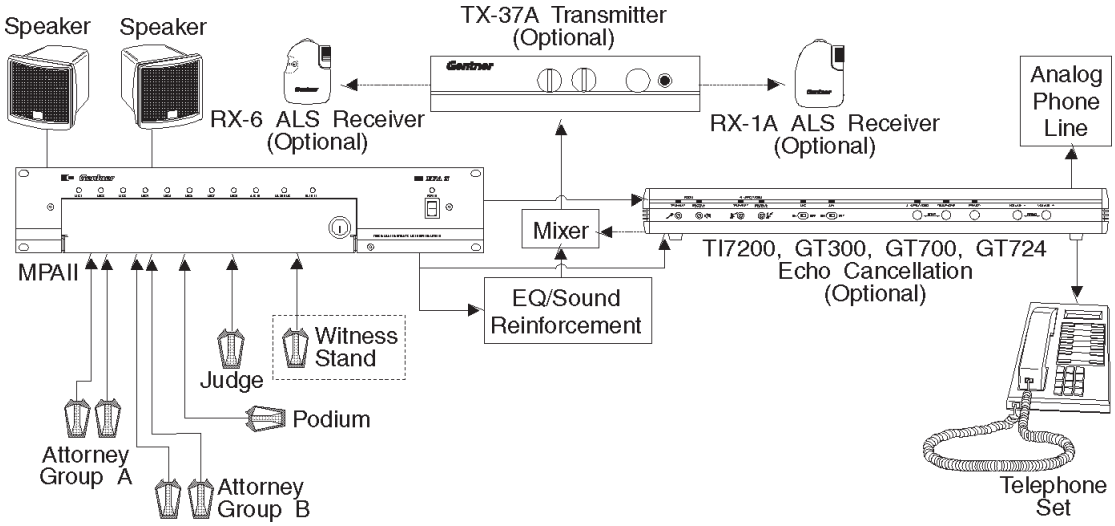


Figure 37. MPAII courtroom application block diagram

Should you need further help or information, contact Gentner Communications.

Convention Centers and Hotel Meeting Rooms

Gentner equipment supports meetings set up for panel discussions in conference centers and hotels. This type of meeting requires a different setup than that of a business meeting or distance-learning application.

The MPAII, in this application, provides up to eight microphones with the power and amplification necessary to conduct a successful meeting. The automatic microphone gating helps control and minimize unnecessary room and microphone noise.

Using Gentner equipment allows the installer greater layout and setup flexibility. Figure 38 (below) details one possible layout.

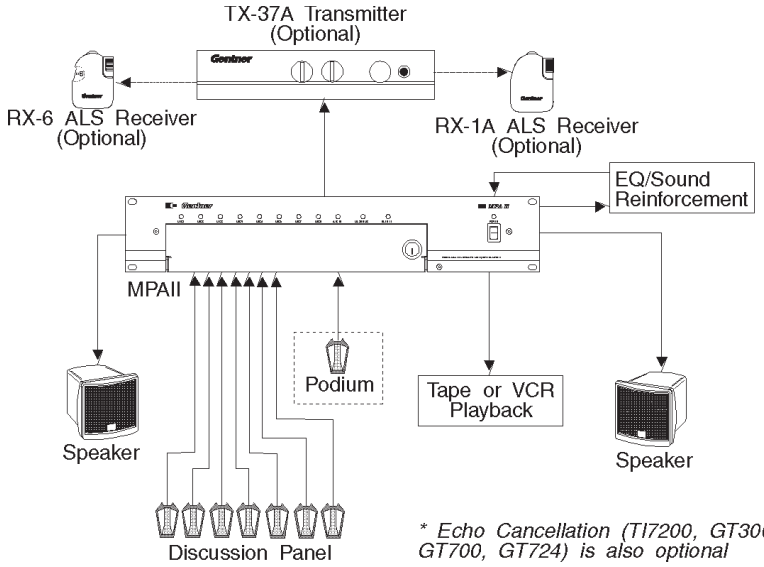


Figure 38. MPAII convention-center application block diagram

Contact Gentner Communications to help specify your equipment and setup needs.

Houses of Worship

This application can be challenging — not because it is difficult, but because it can incorporate so many microphone location variables and, in some cases, cause the technician to work around some interesting acoustical environments.

Figure 39 (below) illustrates a typical installation and details the acoustical solutions that were presented and solved with use of the MPAII.

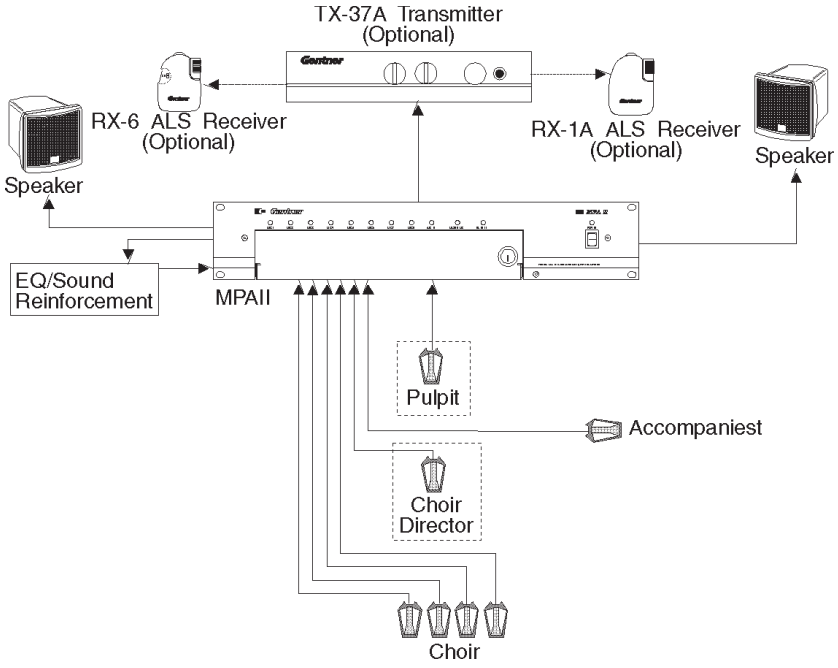
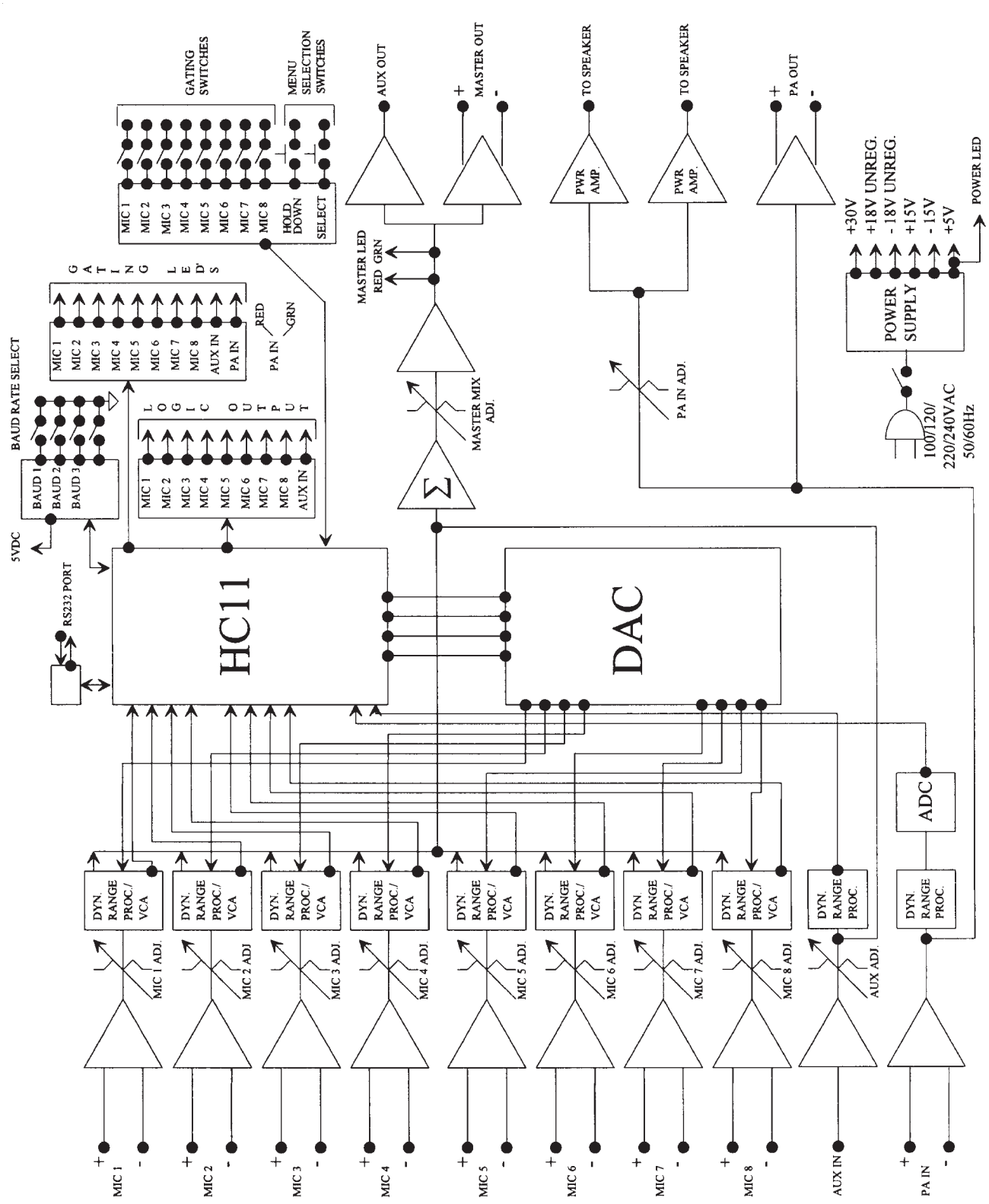
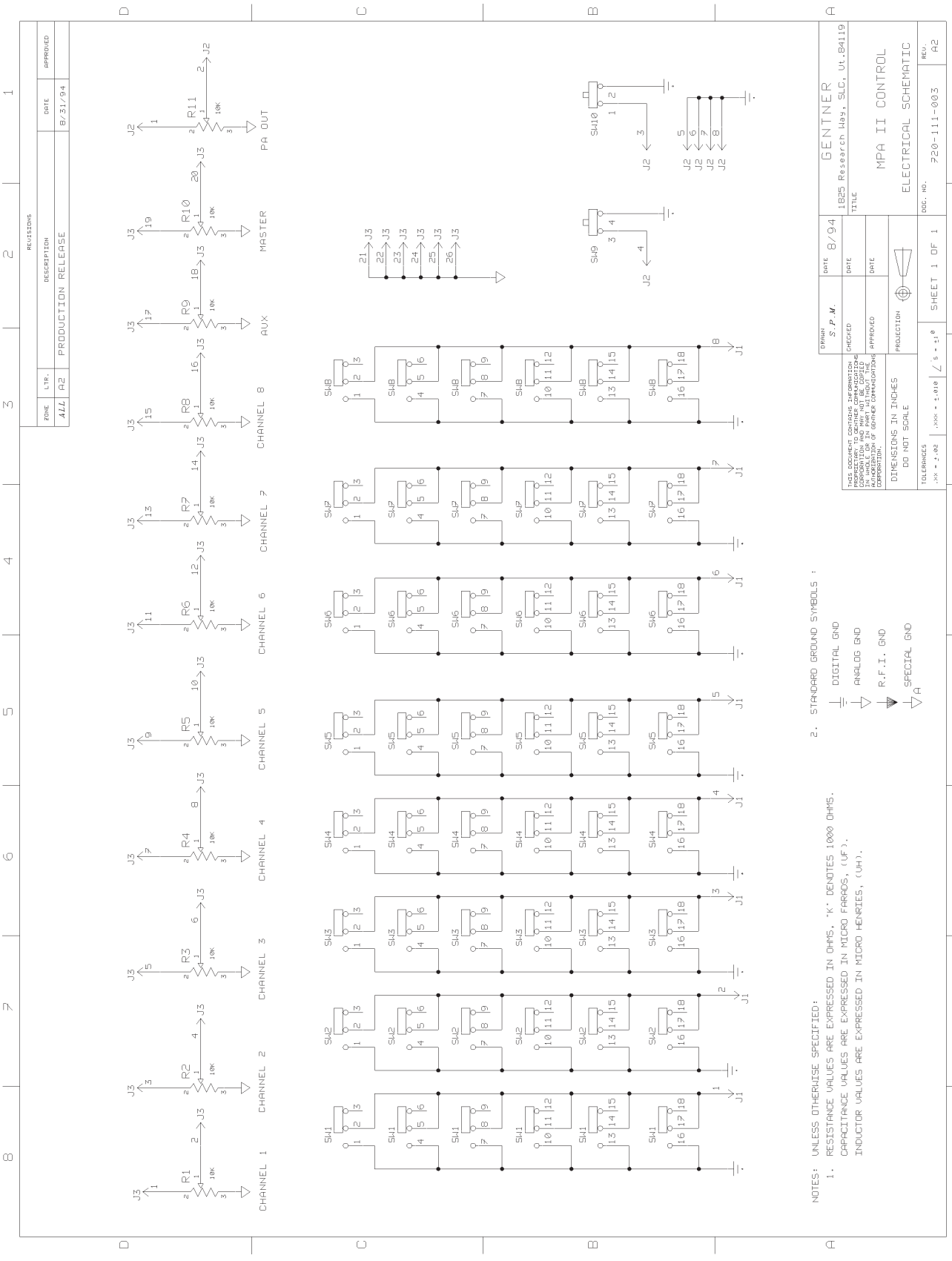


Figure 39. MPAII house of worship application block diagram

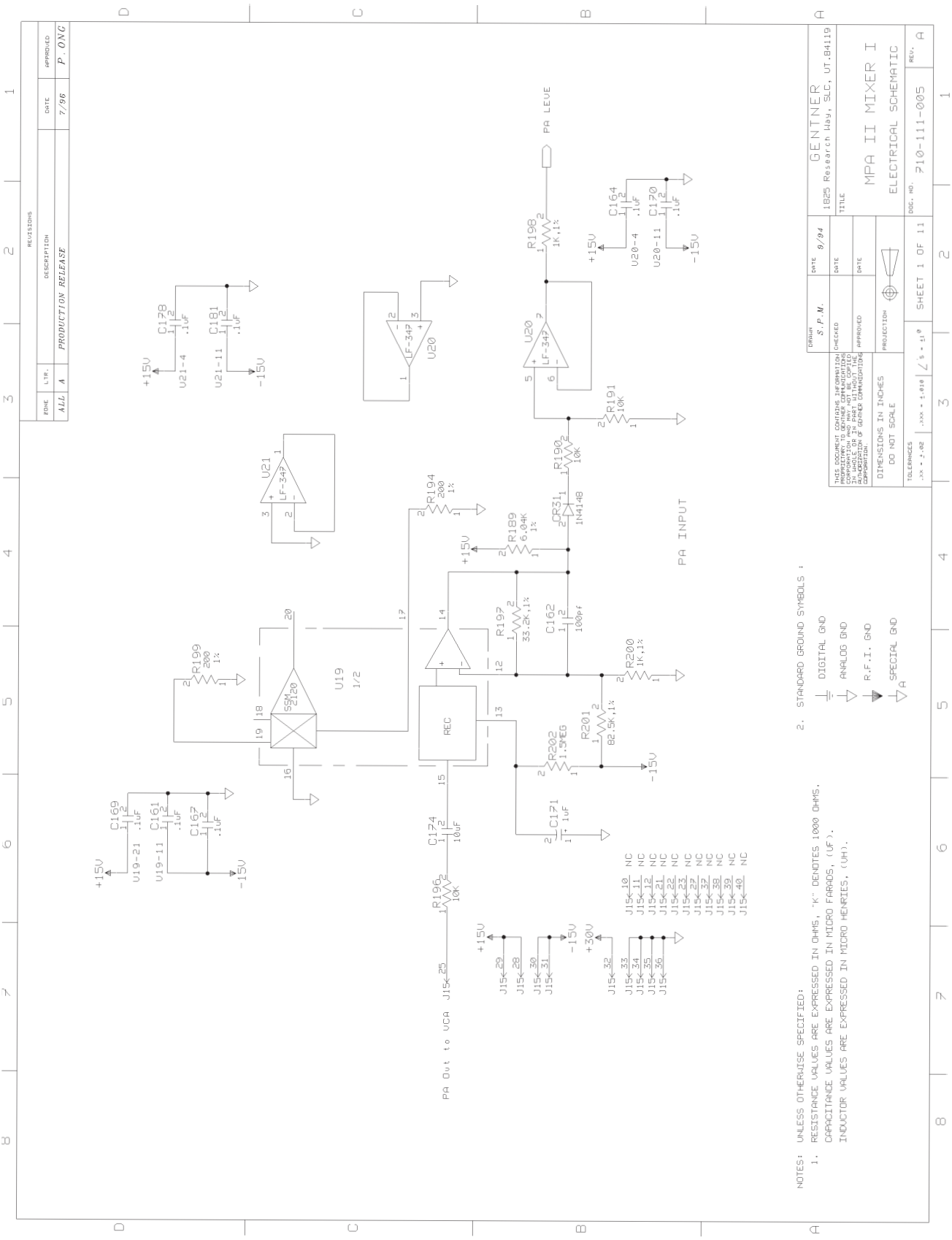
Appendix E: MPAII Block Diagram

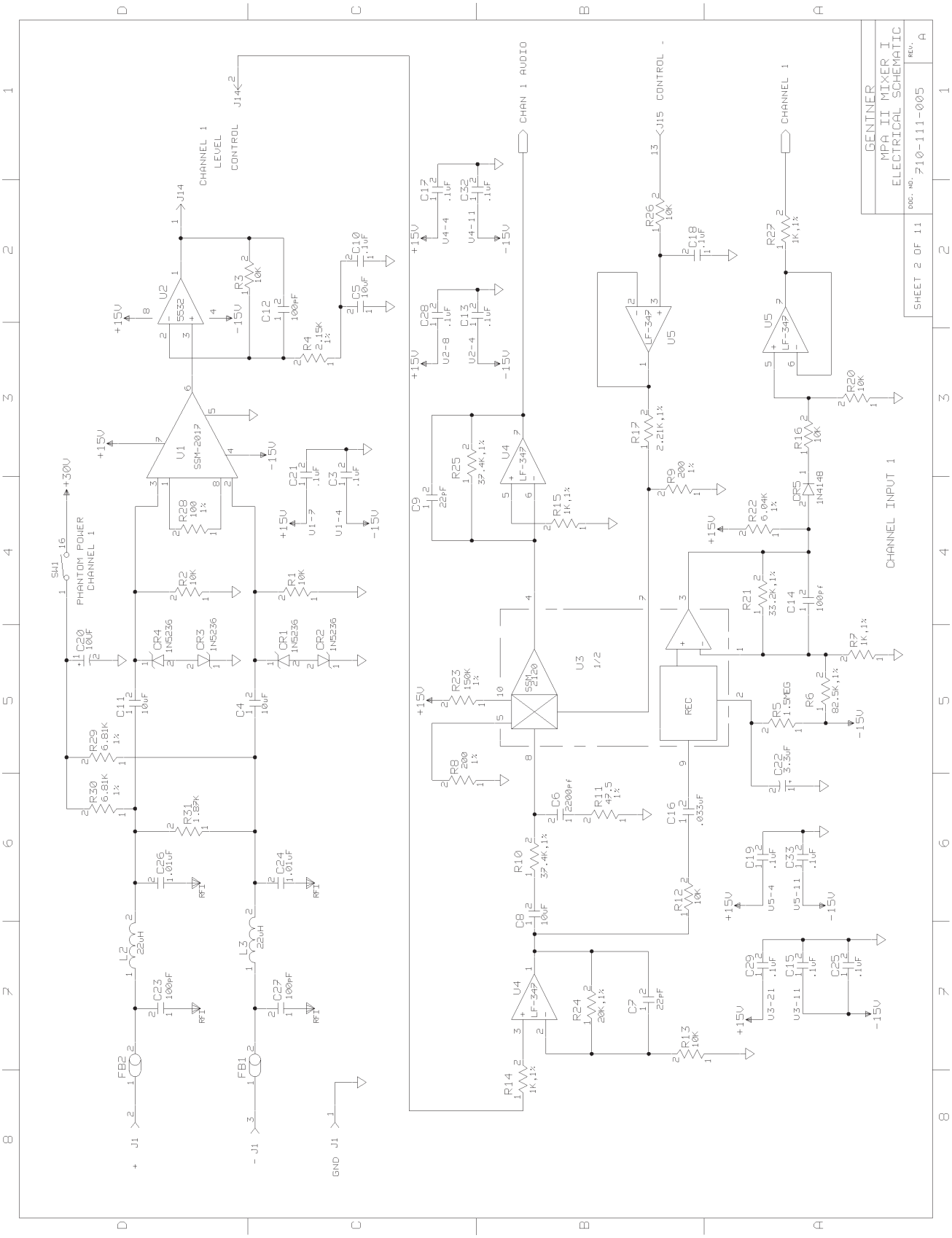


Appendix F: MPAII Schematics

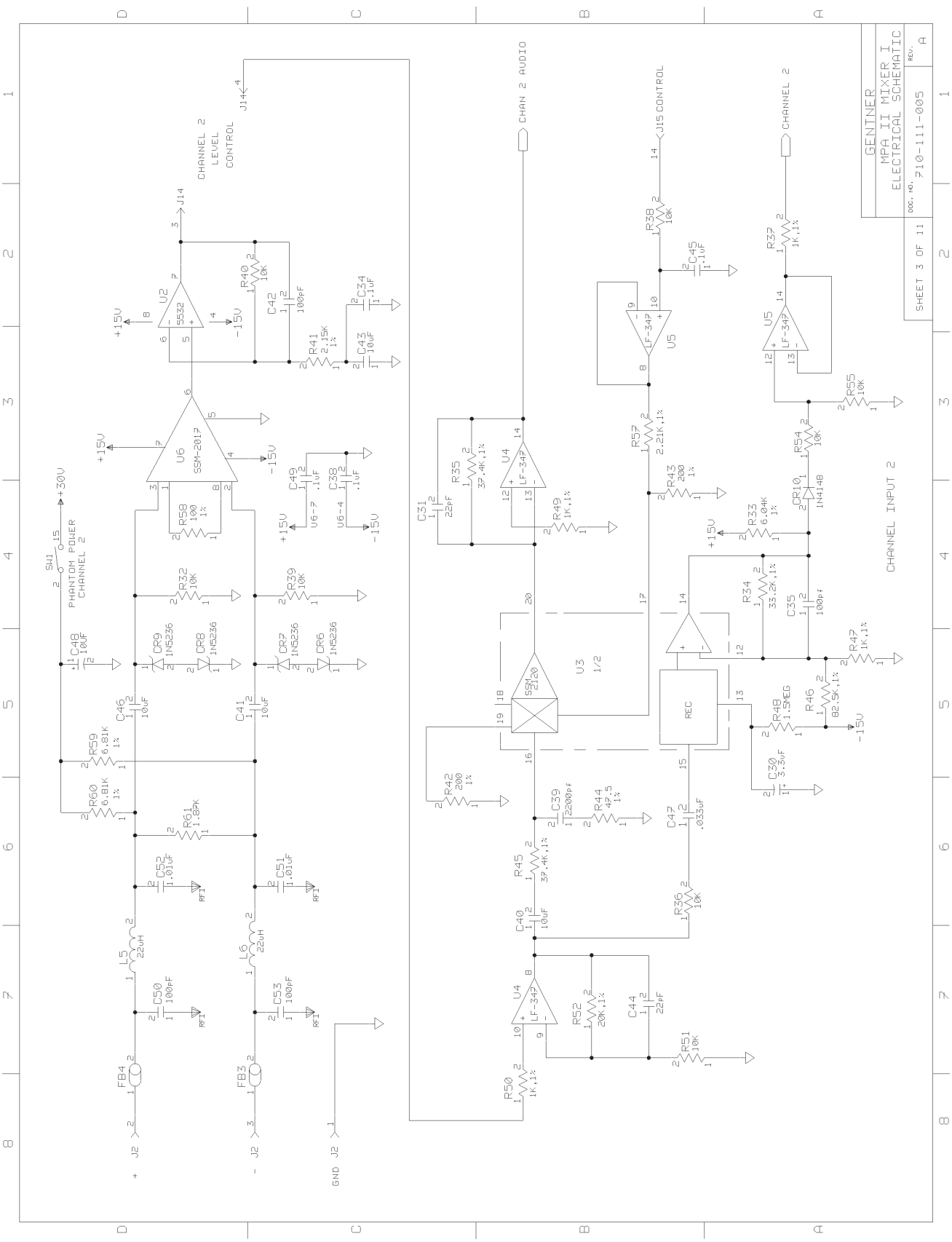


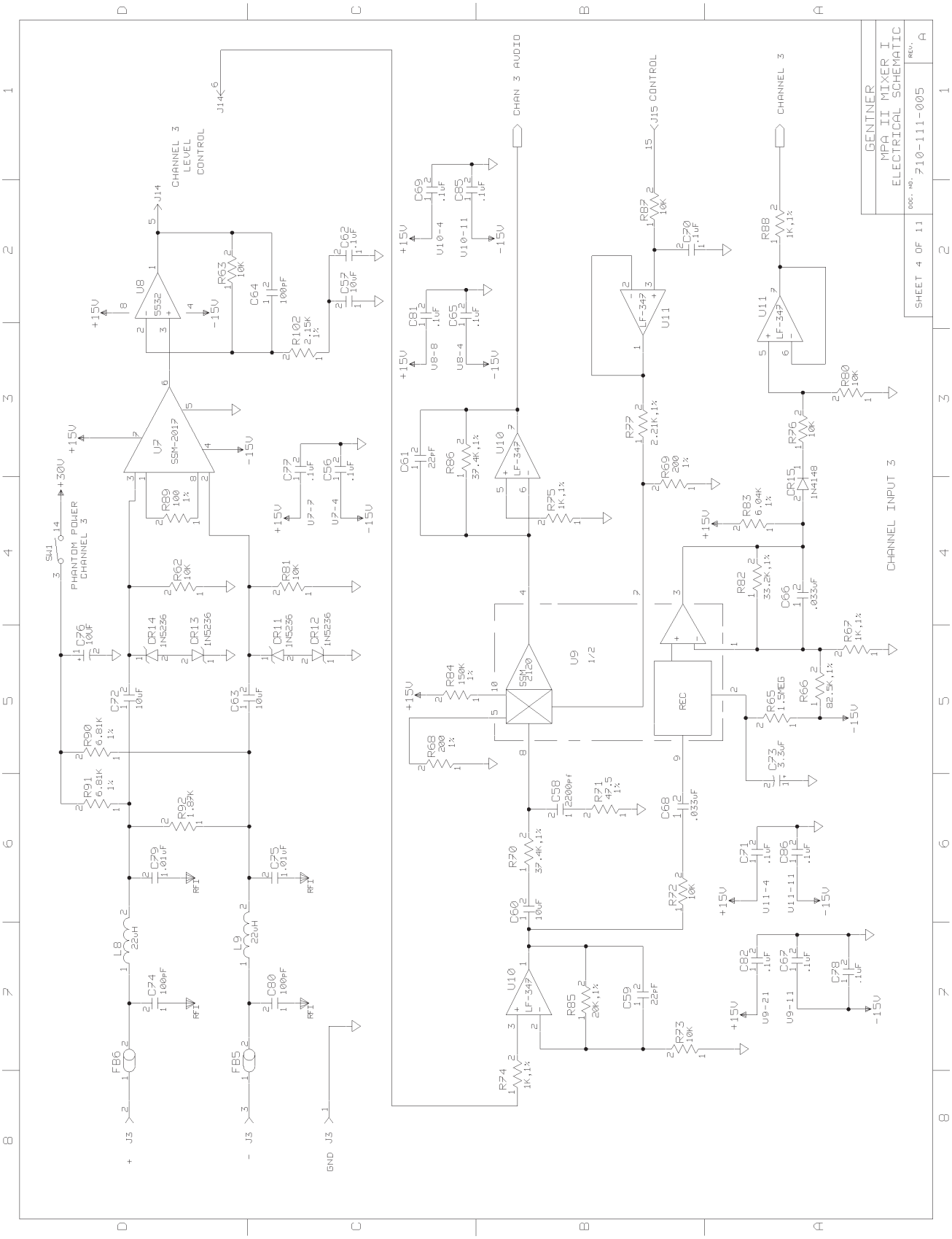
Appendix F: Continued



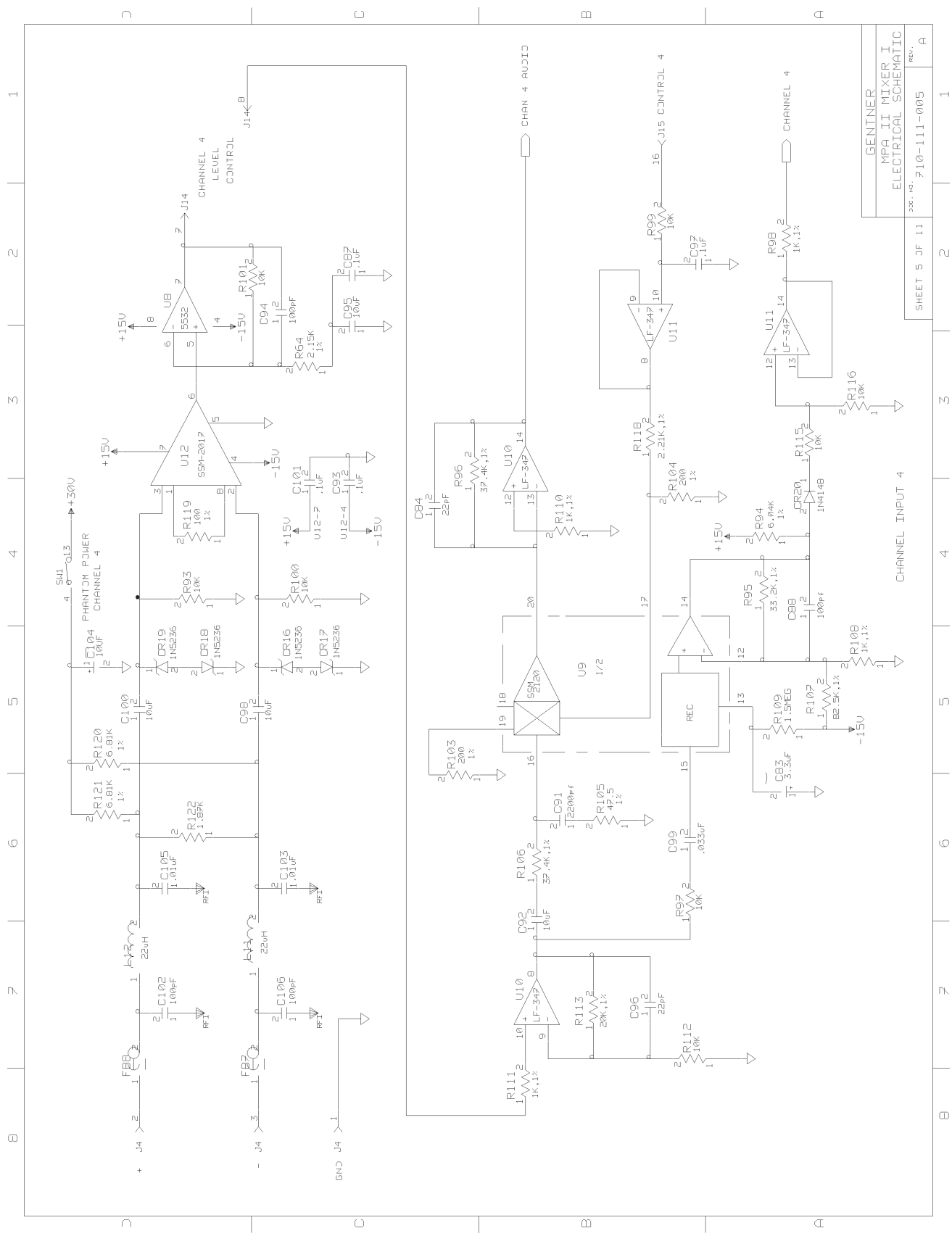

GENTNER
MPA II MIXER I
ELECTRICAL SCHEMATIC
DOC. NO. 710-111-005
REV. A
SHEET 2 OF 11
CHANNEL 1 LEVEL CONTROL
CHAN 1 AUDIO
CHANNEL 1
CHANNEL INPUT 1
PHANTOM POWER CHANNEL 1
U1 SSM-2017
U2 5532
U3 SSM 2120
U4 LF-347
U5 LF-347
REC
+15V
-15V
+30V
GND J1

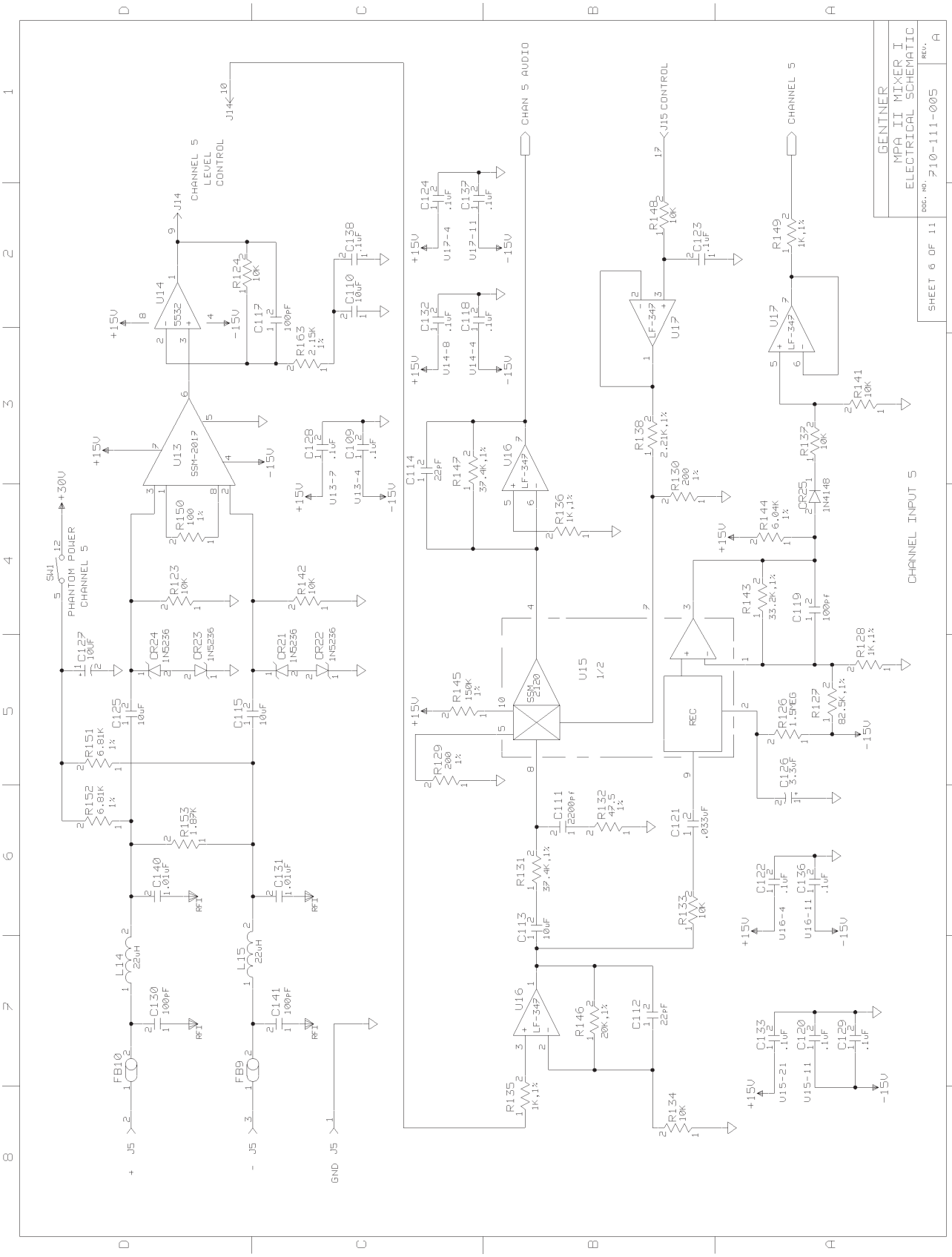
Appendix F: Continued



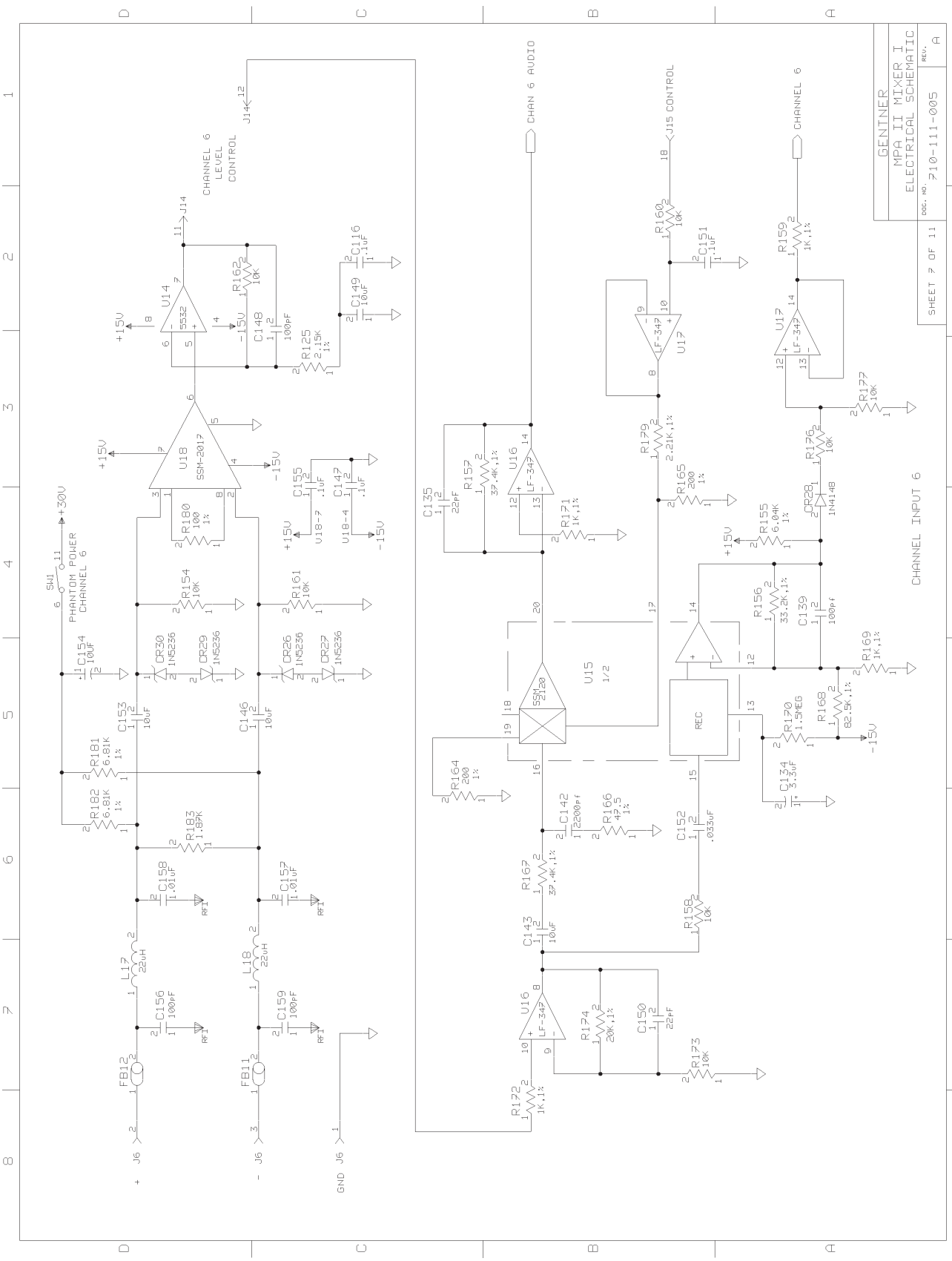

GENTNER
MPA II MIXER I
ELECTRICAL SCHEMATIC
DOC. NO. 710-111-005
REV. A
SHEET 4 OF 11
CHANNEL INPUT 3
CHANNEL LEVEL CONTROL
PHANTOM POWER CHANNEL 3
CHAN 3 AUDIO
J15 CONTROL
CHANNEL 3
U7 SSM-2017
U8 5532
U9 1/2 SSM 2120
U10 LF-347
U11 LF-347
REC
+15V
-15V
+30V
GND J3

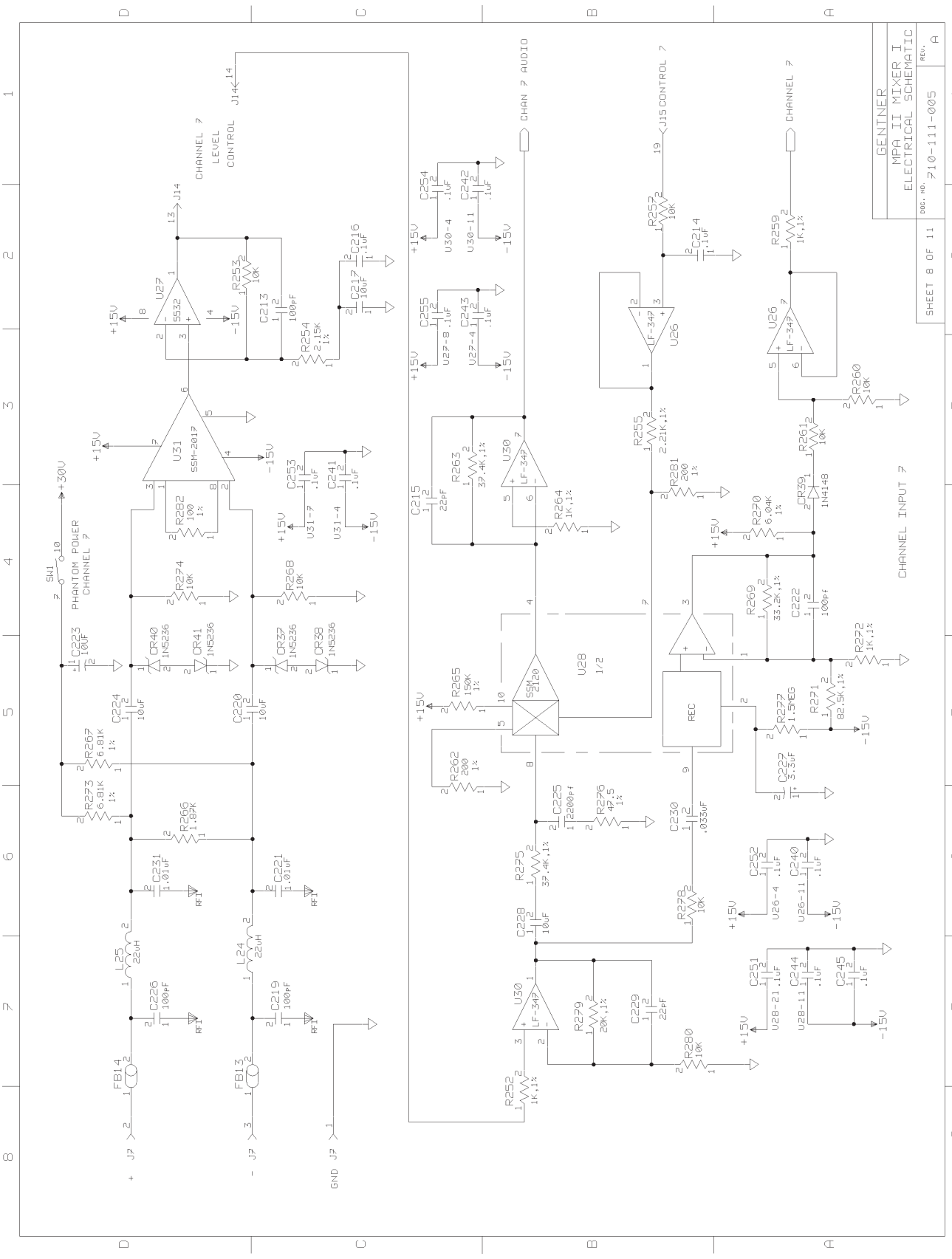
Appendix F: Continued



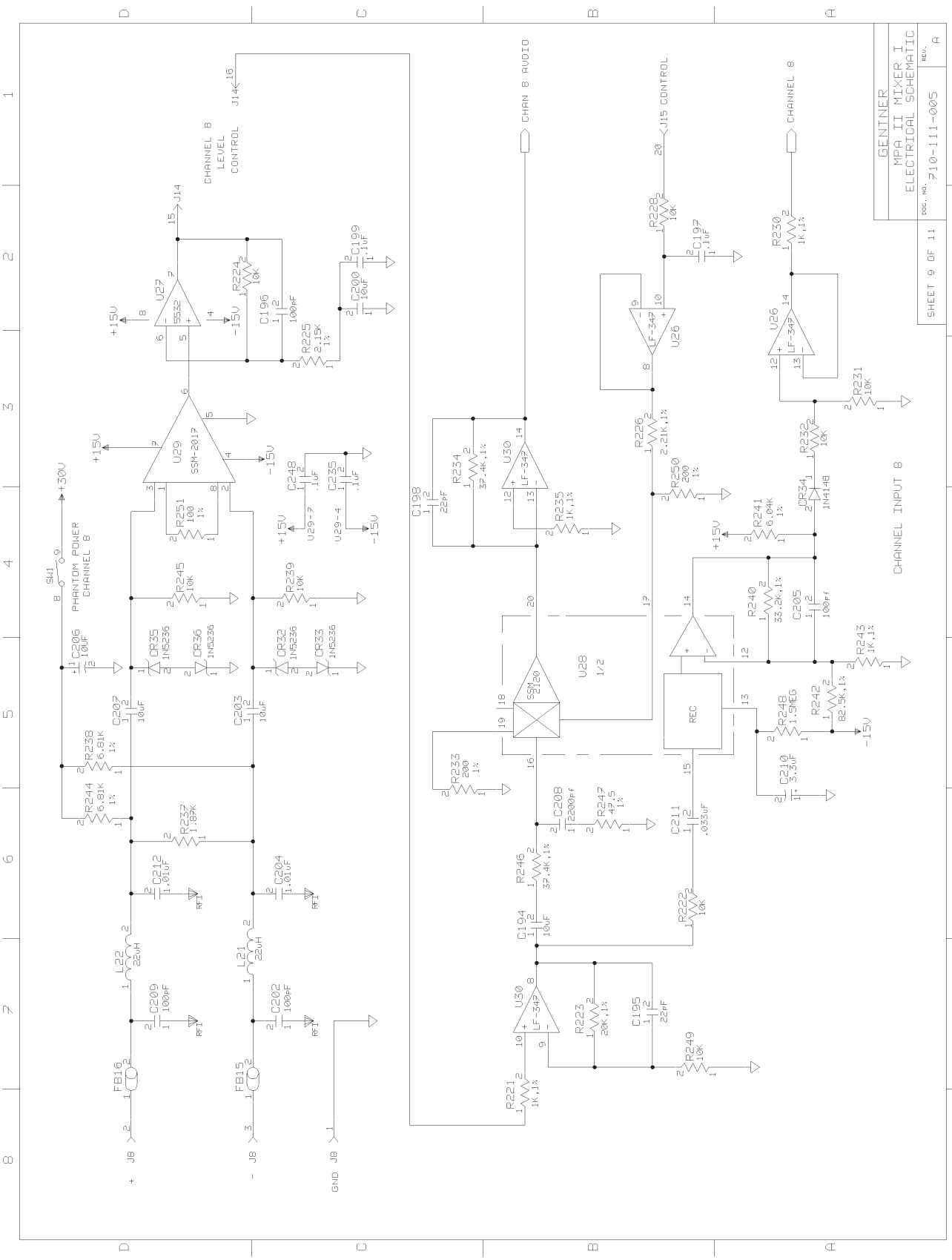

GENTNER
MPA II MIXER I
ELECTRICAL SCHEMATIC
DOC. NO. 710-111-005
REV. A
SHEET 6 OF 11
CHANNEL INPUT 5
CHANNEL 5 LEVEL CONTROL
CHAN 5 AUDIO
J15 CONTROL
CHANNEL 5
PHANTOM POWER CHANNEL 5
SSM-2017
SSM 2120
LF-347
5532
1N4148
1N5236
REC
+ J5
- J5
GND J5

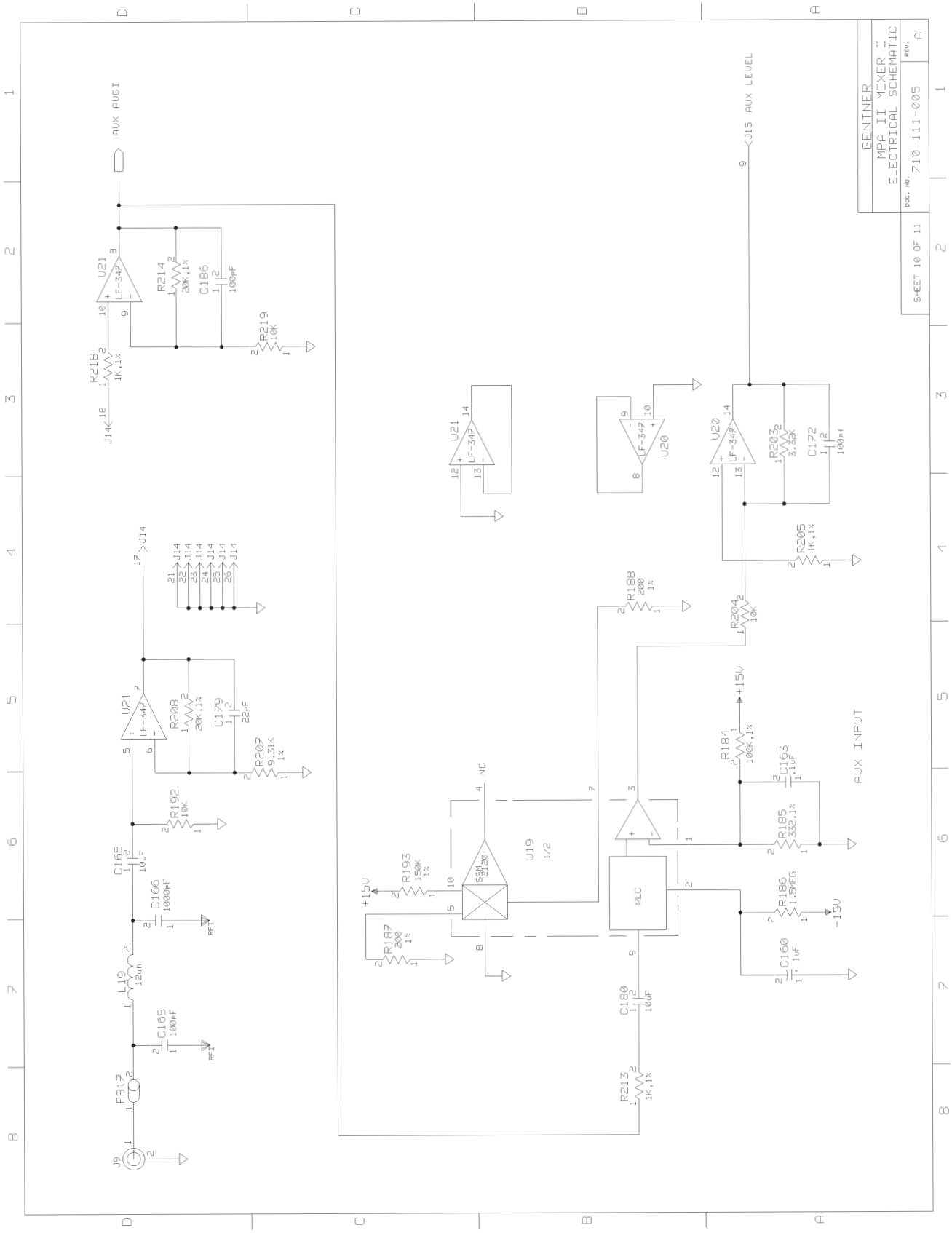
Appendix F: Continued



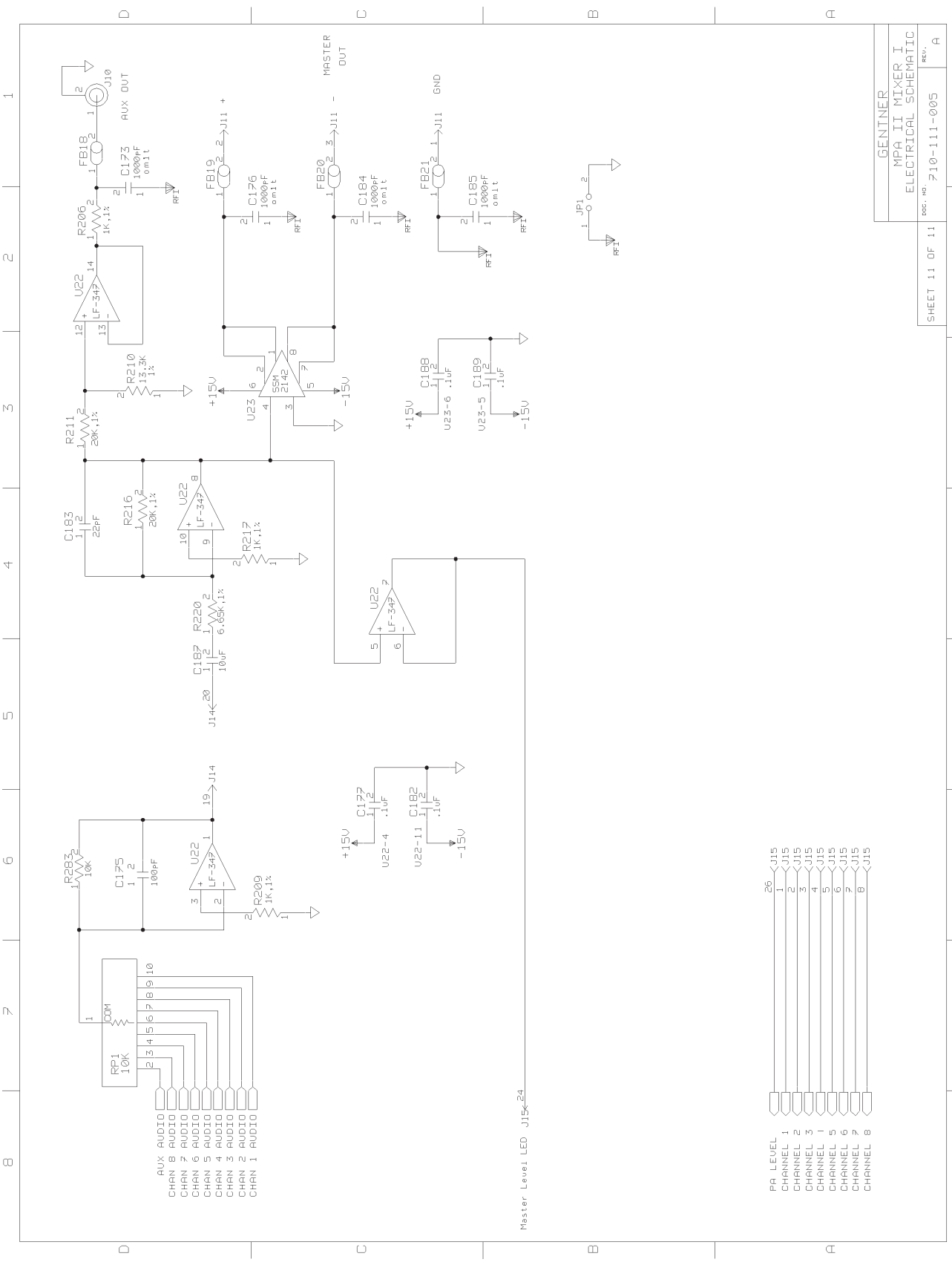

GENTNER
MPA II MIXER I
ELECTRICAL SCHEMATIC
DOC. NO. 710-111-005
REV. A
SHEET 8 OF 11
CHANNEL INPUT 7
CHANNEL 7 LEVEL CONTROL
PHANTOM POWER CHANNEL 7
CHAN 7 AUDIO
J15 CONTROL 7
CHANNEL 7
U27 5532
U31 SSM-2017
U30 LF-347
U28 1/2
SSM 2120
REC
U26 LF-347
+15V
-15V
+30V
GND

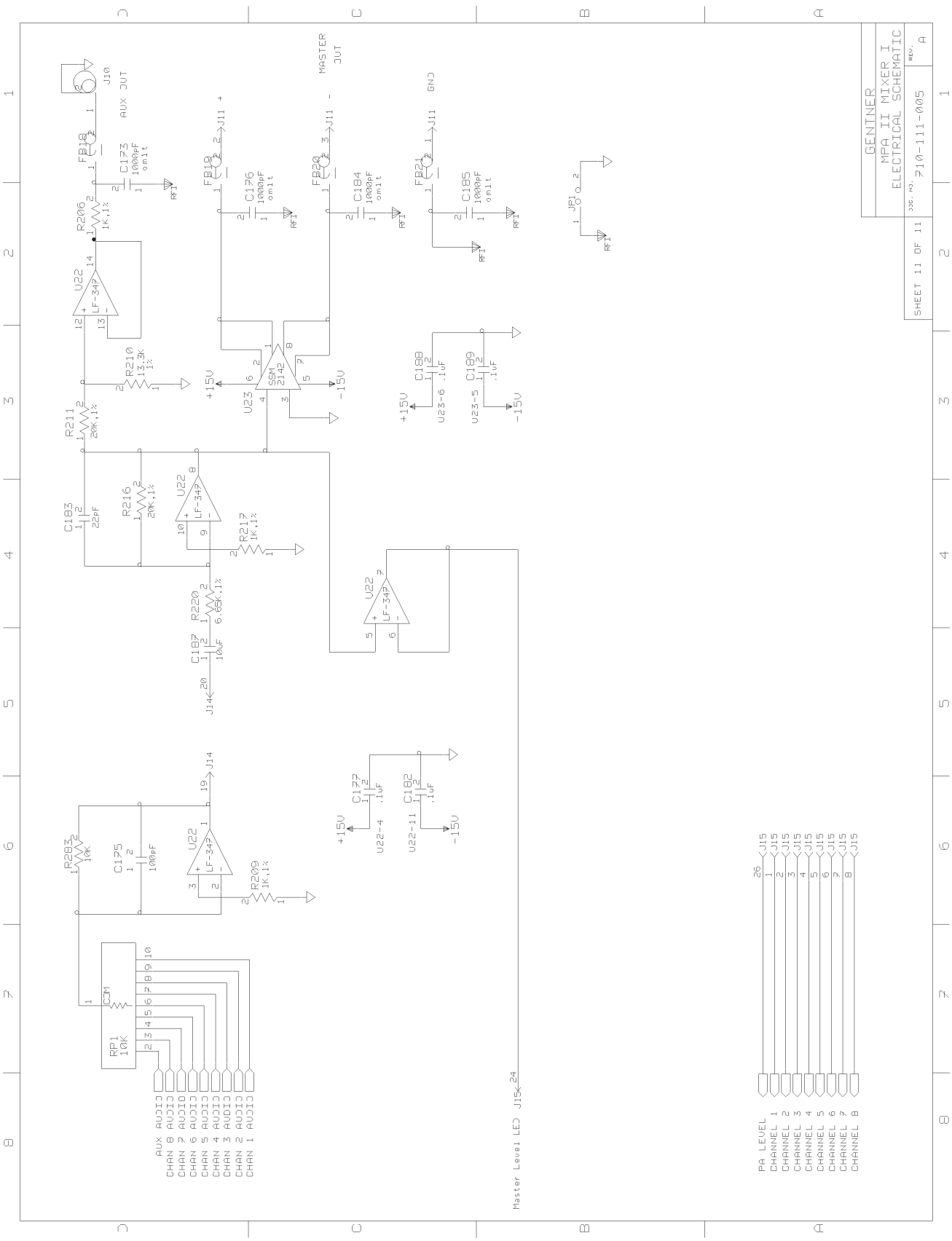
Appendix F: Continued



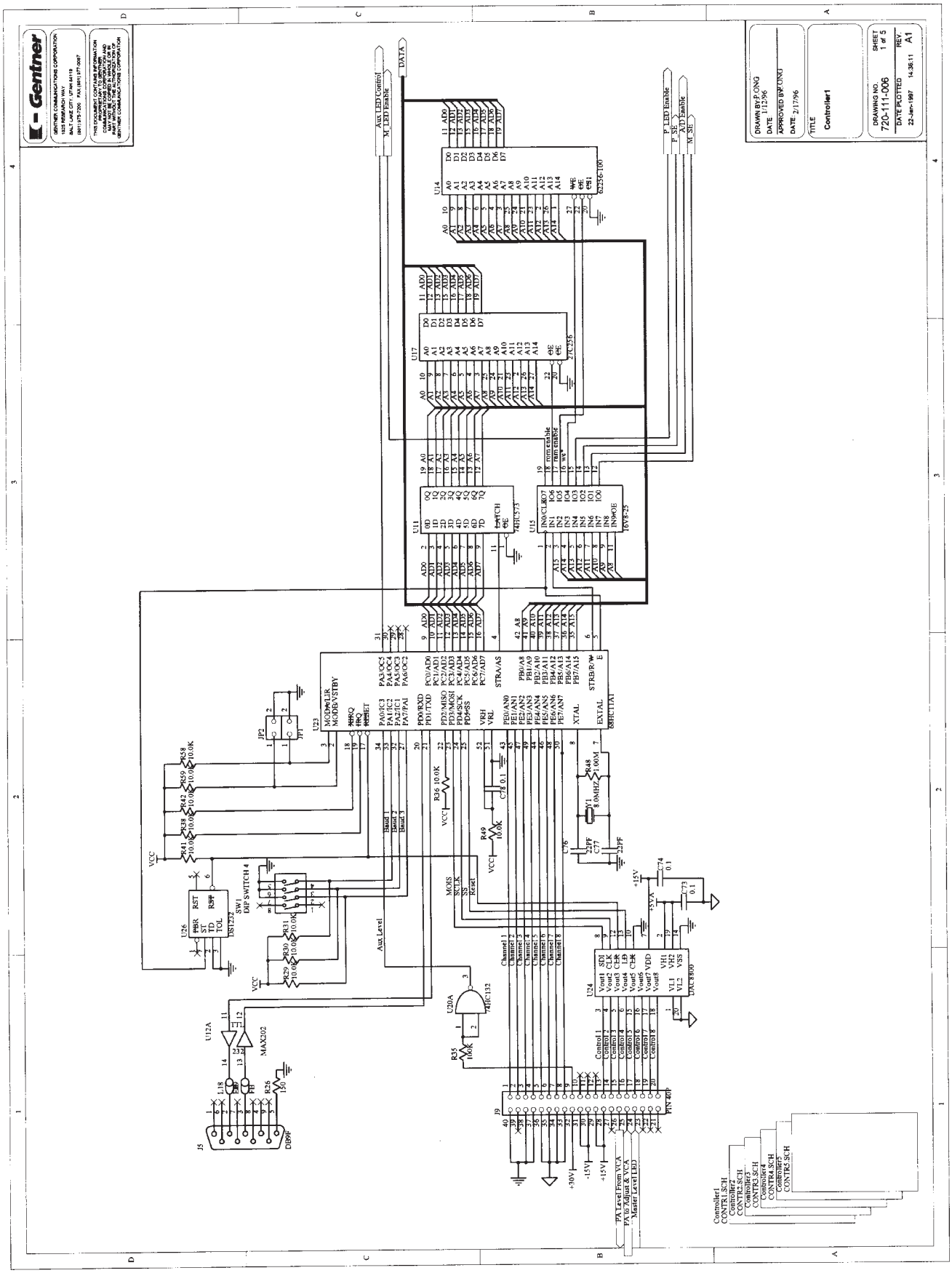

GENTNER
MPA II MIXER I
ELECTRICAL SCHEMATIC
DOC. NO. 710-111-005
REV. A
SHEET 10 OF 11
AUX AUDI
J15 AUX LEVEL
AUX INPUT
U21
LF-347
U20
U19
1/2
SSM 2120
REC
NC
+15V
-15V
R214 20K,1%
C186 100pF
R219 10K
R218 1K,1%
J14
R208 20K,1%
C179 22pF
R207 9.31K 1%
R192 10K
C165 10uF
C166 1000pF
L19 12uh
C168 100pF
FB17
J9
R188 200 1%
R204 10K
R205 1K,1%
R203 3.32K
C172 100pF
R184 100K,1%
C163 1.1uF
R185 332,1%
R186 1.54KEG
C160 1uF
R193 150K 1%
R187 200 1%
C180 10uF
R213 1K,1%

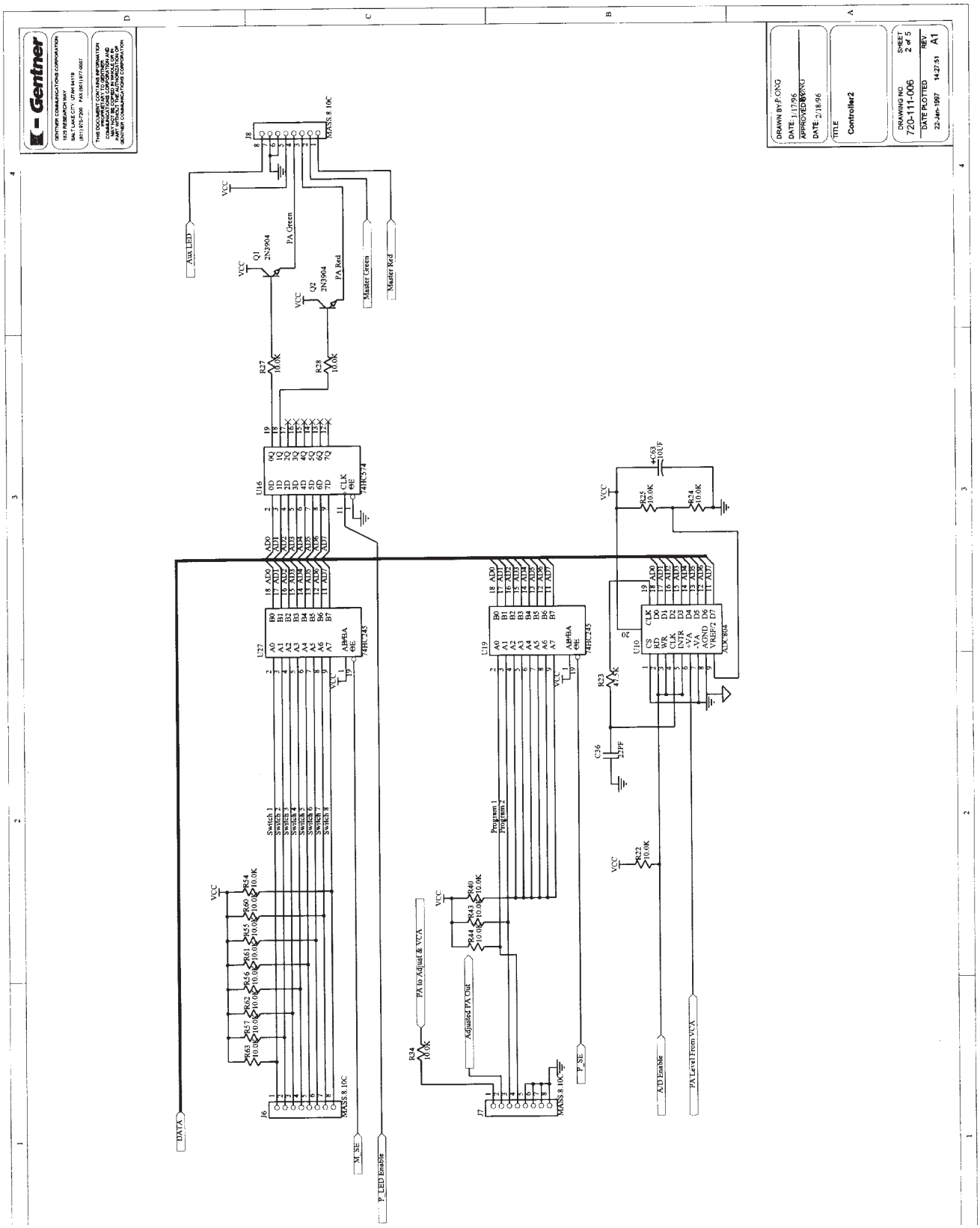
Appendix F: Continued



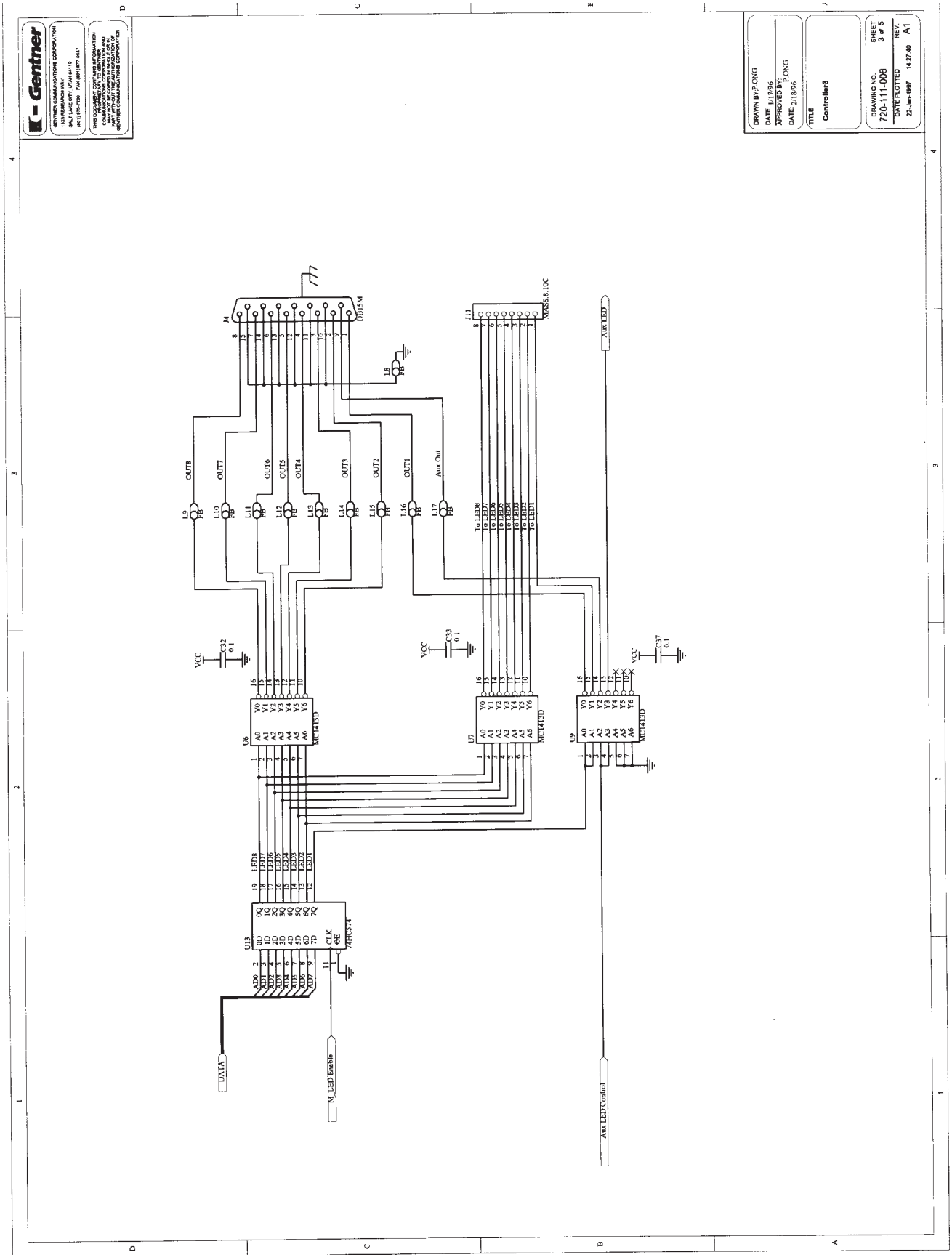

GENTNER
MPA II MIXER I
ELECTRICAL SCHEMATIC
DOC. NO. 710-111-005
REV. A
SHEET 11 OF 11
MASTER OUT
AUX OUT
GND
+15V
-15V
LF-347
SSM 2142
AUX AUDIO
CHAN 8 AUDIO
CHAN 7 AUDIO
CHAN 6 AUDIO
CHAN 5 AUDIO
CHAN 4 AUDIO
CHAN 3 AUDIO
CHAN 2 AUDIO
CHAN 1 AUDIO
PA LEVEL
CHANNEL 1
CHANNEL 2
CHANNEL 3
CHANNEL 4
CHANNEL 5
CHANNEL 6
CHANNEL 7
CHANNEL 8
Master Level LED J15-24

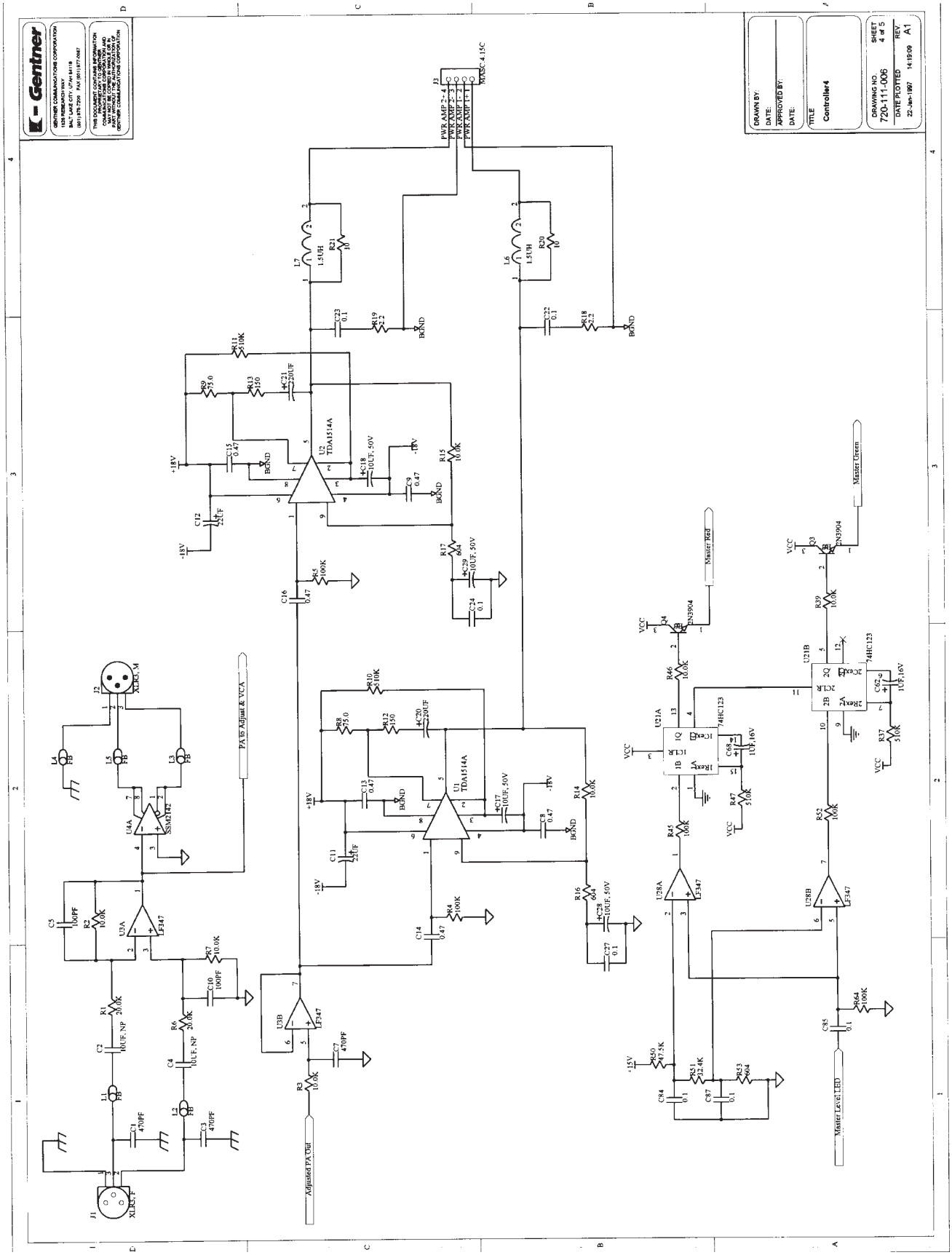
Appendix F: Continued




Gentner
DRAWN BY P ONG
DATE 1/17/96
APPROVED BY BRNG
DATE 2/18/96
TITLE
Controller2
DRAWING NO 720-111-006
SHEET 2 of 5
DATE PLOTTED 22-Jan-1997 14:27:51
REV A1
J8
MASS 8 10C
VCC
Aux LED
Q1 2N3904
PA Green
Q2 2N3904
PA Red
Master Green
Master Red
R27 10.0K
R28 10.0K
U16 74HC574
J9
J1
C63 10UF
R25 10.0K
R24 10.0K
U27 74HC245
U19 74HC245
U10 ADC 0834
R23 47.5K
C36 .1PF
R22 10.0K
R54 10.0K
R60 10.0K
R55 10.0K
R61 10.0K
R56 10.0K
R62 10.0K
R57 10.0K
R63 10.0K
Switch 1
Switch 2
Switch 3
Switch 4
Switch 5
Switch 6
Switch 7
Switch 8
J6
R40 10.0K
R43 10.0K
R44 10.0K
Program 1
Program 2
PA to Adjust & VCA
Adjusted PA Out
R34 10.0K
J7
P_SE
M_SE
P_LED Enable
DATA
A/D Enable
PA Level From VCA

Appendix F: Continued




Gentner
GENTNER COMMUNICATIONS CORPORATION
1133 RIDEAWAY WAY
SALT LAKE CITY, UTAH 84119
(801) 975-7200 FAX (801) 977-0087
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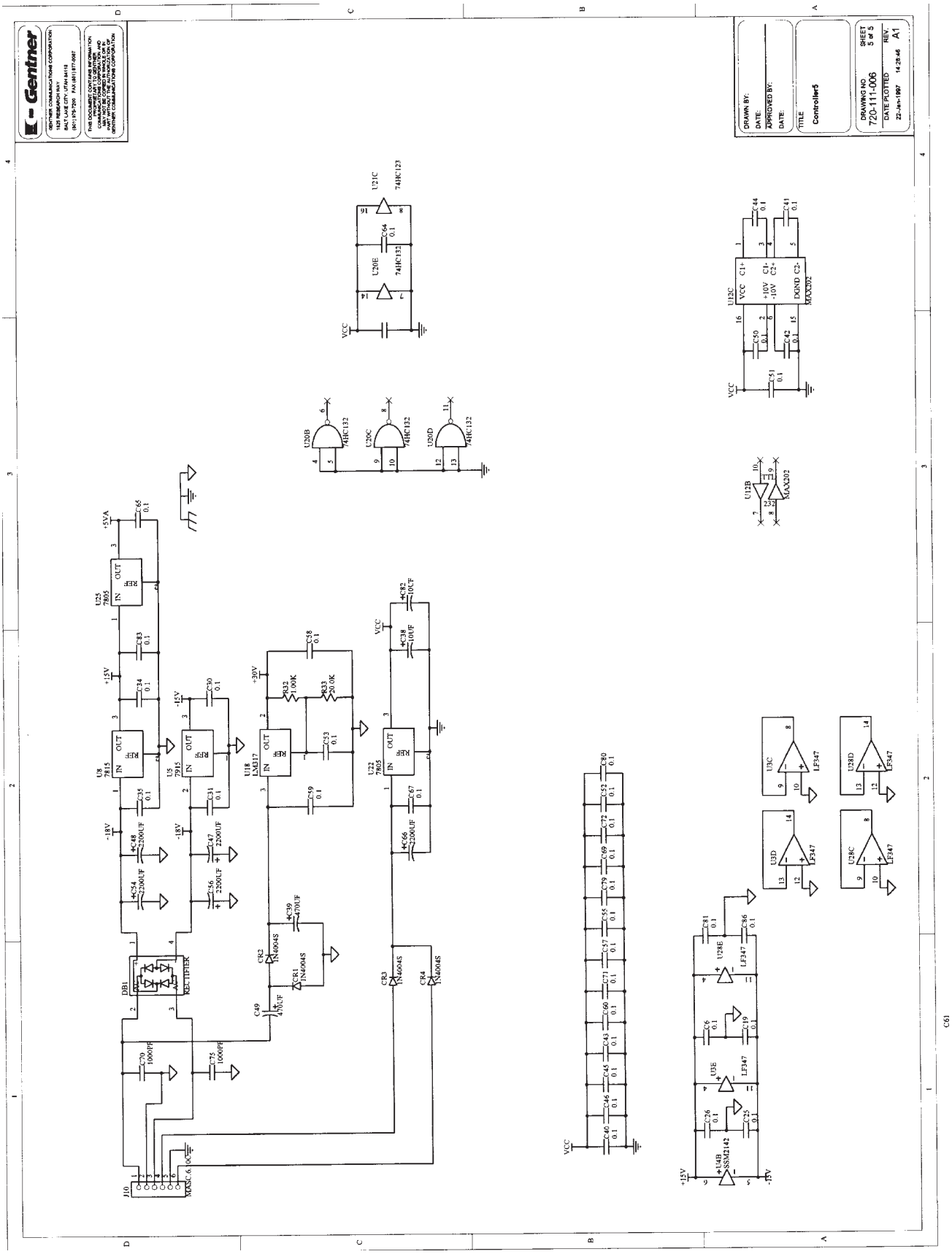
DRAWN BY:
DATE:
APPROVED BY:
DATE:
TITLE
Controller4
DRAWING NO
720-111-006
SHEET
4 of 5
DATE PLOTTED
22-Jan-1997 14:19:09
REV
A1
PWR AMP 2- 4
PWR AMP 2- 3
PWR AMP 1- 2
PWR AMP 1- 1
MASC 4.15C
L7
1.5UH
L6
1.5UH
R21
10
R20
10
C23
0.1
C22
0.1
R19
2.2
R18
2.2
BGND
R11
10K
R9
15.0
R13
150
C21
220UF
C15
0.47
U2
TDA1514A
C18
10UF, 50V
C9
0.47
R15
10.0K
+18V
-18V
C12
22UF
R17
664
C29
10UF, 50V
C24
0.1
R4
100K
C16
0.47
PA IS Adjust & VCA
J2
XLR3-M
L4
FB
L5
FB
L3
FB
U4A
SSM2142
R10
510K
R8
15.0
R12
150
C20
220UF
U1
TDA1514A
C13
0.47
C17
10UF, 50V
C8
0.47
R14
10.0K
C11
22UF
R16
664
C28
10UF, 50V
C27
0.1
R4
100K
C14
0.47
C5
100PF
R2
10.0K
U3A
LF347
R7
10.0K
C10
100PF
R1
20.0K
C2
10UF, NP
R6
20.0K
C4
10UF, NP
L1
FB
L2
FB
C1
470PF
C3
470PF
J1
XLR3-F
U3B
LF347
C7
470PF
R3
10.0K
Adjusted PA Out
Master Mod
Master Green
Master Level LED
VCC
Q4
2N3904
Q3
2N3904
R46
10.0K
U21A
74HC123
C68
10UF,16V
R47
5.0K
R45
10K
U28A
LF347
U21B
74HC123
C62
10UF,16V
R37
5.0K
R39
10.0K
R52
100K
U28B
LF347
R64
100K
C85
0.1
-15V
R50
47.5K
R51
32.4K
R53
604
C84
0.1
C87
0.1

Appendix F: Continued



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