

# **MULTI-NET<sup>®</sup> CONSOLE SETUP INSTRUCTIONS**

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# **MULTI-NET<sup>®</sup> CONSOLE SETUP INSTRUCTIONS**

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DO NOT allow children to operate transmitter equipped radio equipment.

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## SECTION 1 INTRODUCTION

### 1.1 SCOPE OF THIS MANUAL

The scope of this manual is to describe the setup and selection of features in the E.F. Johnson Console for the Multi-Net system. It is intended as a guide for the screens and provides definitions of the functions. Use the Table of Contents and Index to locate specific information. Use this manual to become familiar with the console's operation before using the console, and then as a reference for functions.

### 1.2 MULTI-NET CONSOLE

The Multi-Net Console is based on a computer driven CRT system consisting of a 386 based computer with 4 MB of RAM, hard disk drive, 3.25" floppy disk drive, VGA CRT, 2 serial ports and a 101 AT style keyboard (See Section 2.2). The computer must be equipped with a trackball mouse (see Section 2.2) and custom keyboard (see Section 2.4). The computer uses the extended memory via a software memory manager.

### 1.3 AUDIO INTERFACE

Audio is connected to the console through an expansion slot in the computer. This connection provides the audio volume control for the speaker, headset and unselect audio speaker. This connection also controls the alert tones to be transmitted to the mobiles.

Two inputs to this connection provide the transmit audio function for the transmitter, the desk microphone or a headset microphone.

An output is also provided for connection to a recorder.

### 1.4 911 INTERFACE MODULE

The 911 Interface Module contains the jumpers that selects the operator's headset, supervisor's headset or desk microphone. The selected audio is then routed to the computer. The computer, foot pedal PTT, desk microphone, headsets and interconnect to the RNT are all connected to the interface module.

### 1.5 UNSELECT AUDIO PERSONALITY CARD

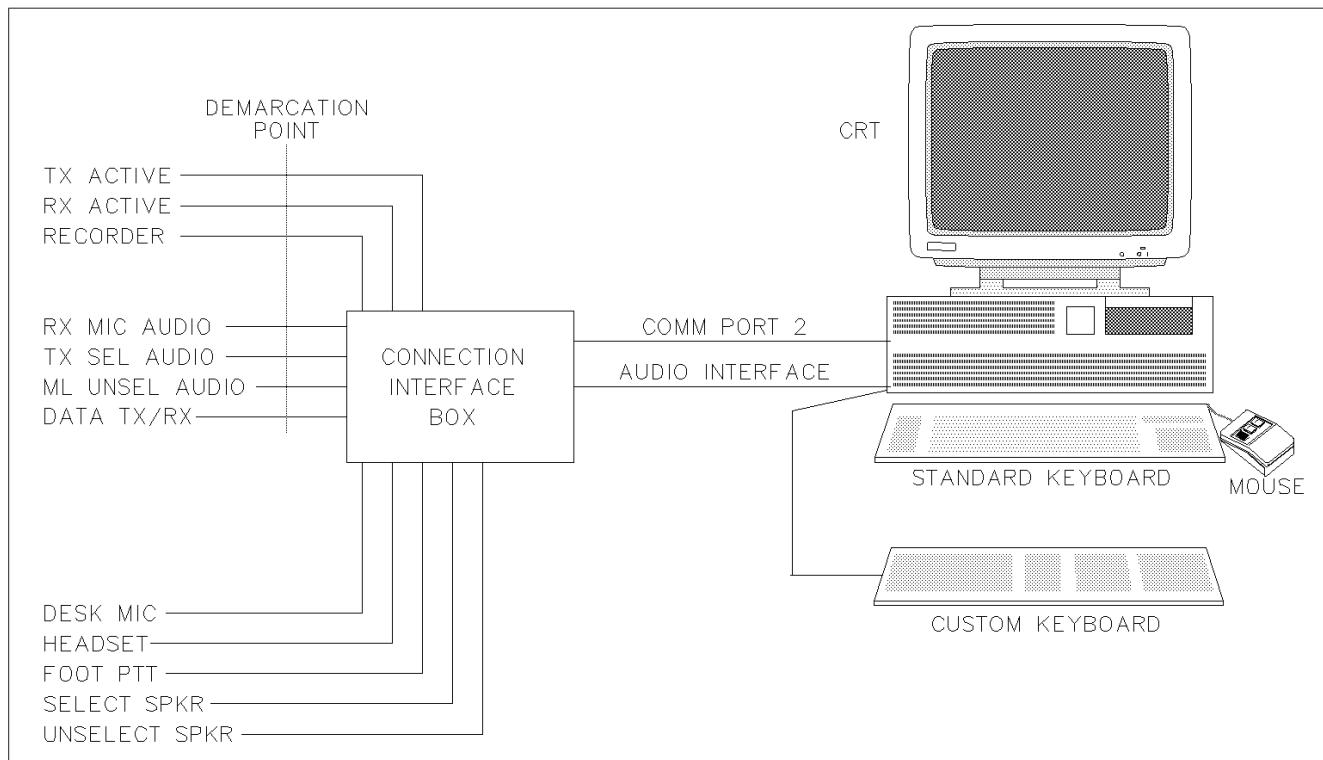
The Multi-Net Console connects to a single Intelligent Dispatch Module (IDM) in the RNT at 9600 baud. There is an unselect audio personality card on the IDM if the console is optioned to have unselect audio.

### 1.6 CONSOLE MANAGER

The Console Manager is the person responsible for the setup and maintenance of Call Blocks, Directories, etc. in all the consoles. Therefore, this manual is structured for the Manager.

### 1.7 CONSOLE USER

The Console User is the person using the console, i.e. Dispatcher. Refer to the Console Operator's Manual, Part No. 002-3039-272.



**Figure 1-1 BASIC CONSOLE SETUP**

## CONSOLE SPECIFICATIONS

|                                |                                                                                                                                 |        |       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------|-------|
| Audio Output                   | +7 dBm maximum into 600 ohms                                                                                                    |        |       |
| Audio Input                    | -30 dBm input minimum from 600 ohms                                                                                             |        |       |
| Boom Microphone                | -80 dBm input                                                                                                                   |        |       |
| Desk Microphone                | -40 dBm input                                                                                                                   |        |       |
| Headset Input                  |                                                                                                                                 |        |       |
| GN Profile III (-024)          | -57 dBm input                                                                                                                   |        |       |
| Plantronics series (-030/-032) | -22 dBm input                                                                                                                   |        |       |
| Line Balance                   | 66 dB at 1 kHz                                                                                                                  |        |       |
| Distortion                     | < 3% at full output levels                                                                                                      |        |       |
| Frequency Response             | -3 to +1 dB from 300 to 3 kHz                                                                                                   |        |       |
| Speaker Output                 | 5 watts                                                                                                                         |        |       |
| Mute Level                     | > 50 dB from full output                                                                                                        |        |       |
| RS-232 Interface               | Tx/Rx with ground, 4-wire MODEM option                                                                                          |        |       |
| Recorder Output                | 600 ohm balanced or 300 ohm unbalanced                                                                                          |        |       |
| Diagnostics                    | Displayed on CRT and at the System Management Module                                                                            |        |       |
| Capacity                       | 1 position per Intelligent Dispatch Module. Number of positions essentially unlimited (Contact E.E. Johnson Systems Marketing). |        |       |
| Power Input                    |                                                                                                                                 |        |       |
| Computer                       | 115V AC 6A or 230V AC 4A 50/60 Hz                                                                                               |        |       |
| CRT                            | 120/240V AC 90 Watts 50/60 Hz                                                                                                   |        |       |
| Dimensions                     | Height                                                                                                                          | Width  | Depth |
| Computer                       | 6.50"                                                                                                                           | 14.00" | 18.0" |
| CRT                            | 14.50"                                                                                                                          | 14.00" | 18.0" |
| Keyboard                       | 2.75"                                                                                                                           | 19.00" | 8.0"  |
| Mouse                          | 1.50"                                                                                                                           | 5.00"  | 4.5"  |
| 911 Interface Module           | 5.25"                                                                                                                           | 19.00" | 2.0"  |
| 911 Jackbox                    | 4.50"                                                                                                                           | 7.25"  | 1.5"  |
| Speaker Panel                  | 5.25"                                                                                                                           | 19.00" | 4.5"  |
| Custom Keyboard                | 2.00"                                                                                                                           | 16.00" | 5.5"  |
| Environment                    | 10°C to 50°C with 10% to 90% noncondensing humidity                                                                             |        |       |
| Telco Input                    | 0 dB maximum, -17 dB minimum (Typically -7 dB)                                                                                  |        |       |

## INTRODUCTION

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### DIGITAL INPUTS

|                  |                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------|
| Number of Inputs | 8                                                                                                  |
| Type             | Non-polarized, optically isolated from each other and from the computer (not TTL/CMOS compatible). |
| Voltage Range    | 5 to 24V DC or AC (50 to 1 kHz)                                                                    |
| Isolation        | 500V channel-to-ground or channel-to channel                                                       |
| Input Resistance | 470 ohms in series with two diodes and an LED                                                      |
| Response Time    | 10 ms w/filter, 20 $\mu$ s w/o filter                                                              |

### RELAY OUTPUTS

|                     |                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------|
| Number of outputs   | 8                                                                                                 |
| Contact Rating      | 2A carry current, bifurcated, gold clad, silver palladium                                         |
| Contact Arrangement | Channels 0-4 are SPDT Form C<br>Channels 5-7 are SPST Form A                                      |
| Contact Resistance  | Initial 100 milliohms maximum                                                                     |
| Contact Life        | Mechanical 100 million operations minimum<br>Electrical 5 million operations minimum at full load |
| Operating Time      | 5 milliseconds maximum                                                                            |

|                |                                |
|----------------|--------------------------------|
| POWER REQUIRED | +5V DC at 0.5A (all relays ON) |
|----------------|--------------------------------|

### ENVIRONMENTAL

|                     |                                                  |
|---------------------|--------------------------------------------------|
| Ambient Temperature | Operating 0° to +50° C<br>Storage -20° to +70° C |
| Humidity            | 0 to 90% (non-condensing)                        |
| Weight              | Approximately 8 ounces                           |

## SECTION 2 CONSOLE SCREEN LAYOUT

### 2.1 PHYSICAL FEATURES

The Console utilizes a window style of operation. Refer to Figure 2-1 for an example of the screen presentation and Sections 2.2 and 2.4 for example of the keyboards.

#### 2.1.1 SCREEN GRAPHICS

1. The blue logo in the upper left corner of the console screen is a transmit indicator. The logo changes to white when the PTT is pressed and the call is in queue while the logo remains white. The logo changes to red when system access is gained and the transmitter has actually been keyed.
2. There are 16 Call Blocks displayed on the upper right side. Each call block displays the title identifying the block. The block also shows the name given a Unique ID when receiving (or the Unique ID number if a name is not assigned) and the Unique ID's status and Priority.
3. The Console title, month, day, year and time in hours:minutes:seconds (and hours:minutes in large numbers) are in the upper left corner. Refer to Figure 2-1.
4. There are 2 sets of 15 function icons displayed along the lower left. The name of the function is displayed in the key.
5. The area on the lower right is a scroll area. Information concerning calls are displayed in this window as calls are received.
6. Active alarm and relay indicators are displayed in a vertical area to the left of the call blocks.

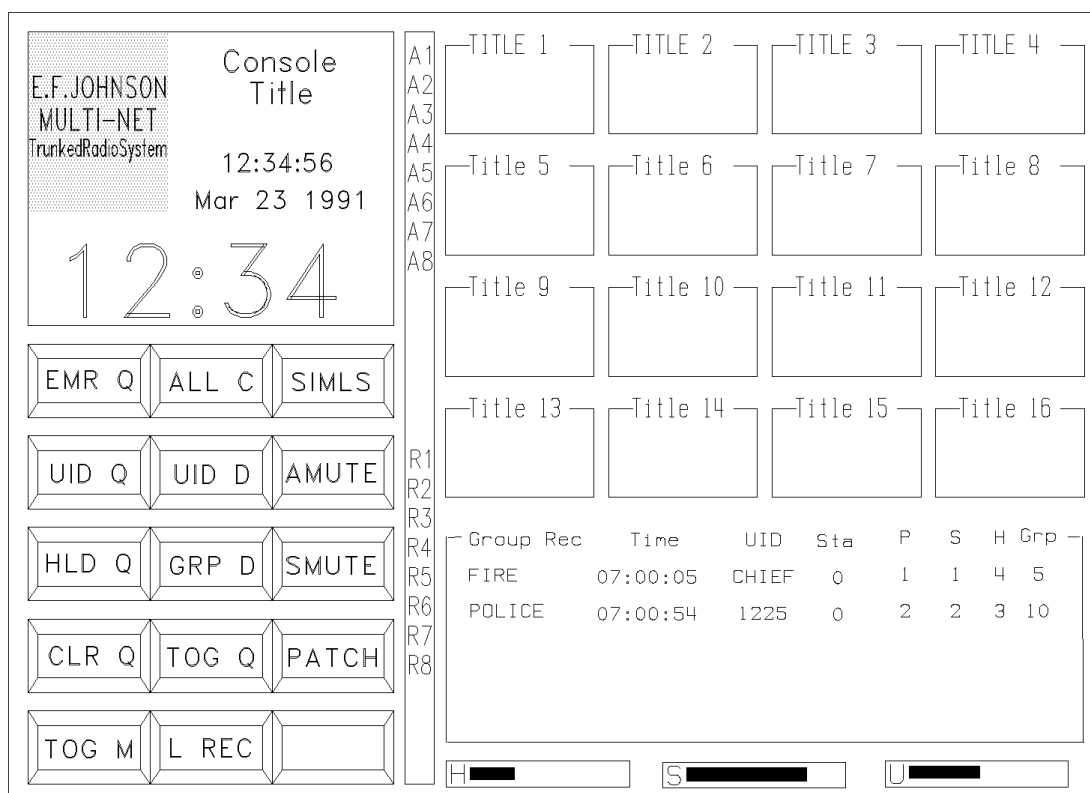


Figure 2-1 MULTI-NET CONSOLE SCREEN LAYOUT

## 2.2 STANDARD KEYBOARD

The standard keyboard is used for Disk Operating System (DOS) operations only. See Appendix A for a cross reference to custom keyboard keys.

## 2.3 TRACKBALL MOUSE

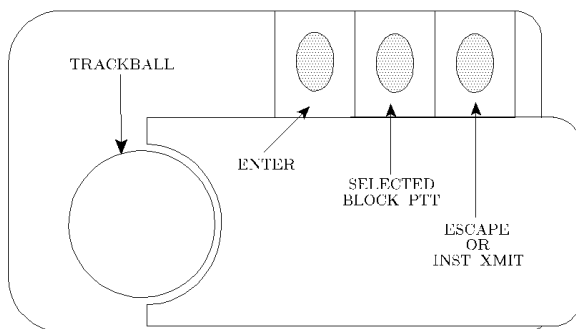
The console can be equipped with a trackball style mouse. When the mouse is used the trackball moves the cursor to selections in the same manner as the arrow keys.

### 2.3.1 KEY DESCRIPTIONS

As shown in Figure 2-2 the left mouse key is used as the Enter key, the middle key as the PTT key and the right key as the Escape key. When making data entries such as Site Selection etc., the keyboard Enter, Escape and arrow keys must be used to accept entries, exit the menus and move the cursor, the mouse keys have no effect during the data entry operation.

### 2.3.2 TRACKING SENSITIVITY

Set the sensitivity of the mouse by pressing the CNTL, ALT and mouse middle key at the same time. A popup window appears and the ballistics can be adjusted for the sensitivity of the trackball (Normal settings are: ballistics=high, sensitivity=2).



**Figure 2-2 TRACKBALL MOUSE**

## 2.4 CUSTOM KEYBOARD

With the custom keypad, the keys are designated to select icons without having to place the cursor on the screen icon and press the Enter key. Pressing the TOG M icon key enables the function in the lower half of the key, and pressing the TOG M icon key again toggles the icon keys to the functions at the top portion of the icon key.

The arrow keys are used to move the cursor around the screen to the various menu selections. The alphabet keyboard is used to enter names of Call Blocks, etc. and the keypad at the right is used to select Call Blocks. The numerical keypad in the center is used to enter numbers and DTMF digits.

### 2.4.1 KEY DESCRIPTIONS

#### 1. Alphabetical Key Section

These keys are used to enter filenames, call block titles, etc. by the console manager.

#### 2. Numeric Key Section

These keys are used to enter numbers and to send DTMF tones.

#### 3. Function Icon Key Section

The keys are designated to select function icons without having to place the cursor on the screen icon and press the Enter key.

Pressing the TOG M icon key enables the function in the lower half of the key, and pressing the TOG M icon key again toggles the function icon keys to the functions at the top portion of the icon keys.

The arrow keys are used to move the cursor around the screen to the various menu selections.

#### 4. Call Block Key Section

The keypad at the right is used to select Call Blocks.



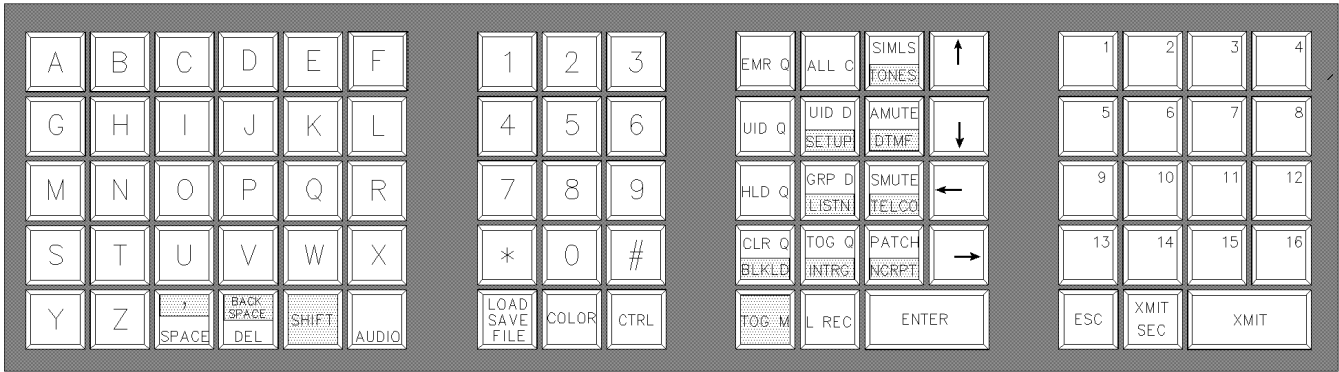


Figure 2-3 CUSTOM KEYBOARD



SECTION 3    CONSOLE SETUP

3.1 INTRODUCTION

The SETUP function allows the setup of Site, Homes and Groups each console is allowed to use (See Figure 3-2). Call Blocks, Group Directories and Unique ID Directories can be selected from this menu by their 8 character names. This function also permits the customization of the title (See Section 3.4).

NOTE: The descriptions for setup are given for the custom keyboard. Refer to Section 2.2 for use of the computer keyboard and trackball mouse.

Different functions and directories must be configured before the console will operate correctly. Some of these features may not pertain to your console, therefore those steps will be skipped.

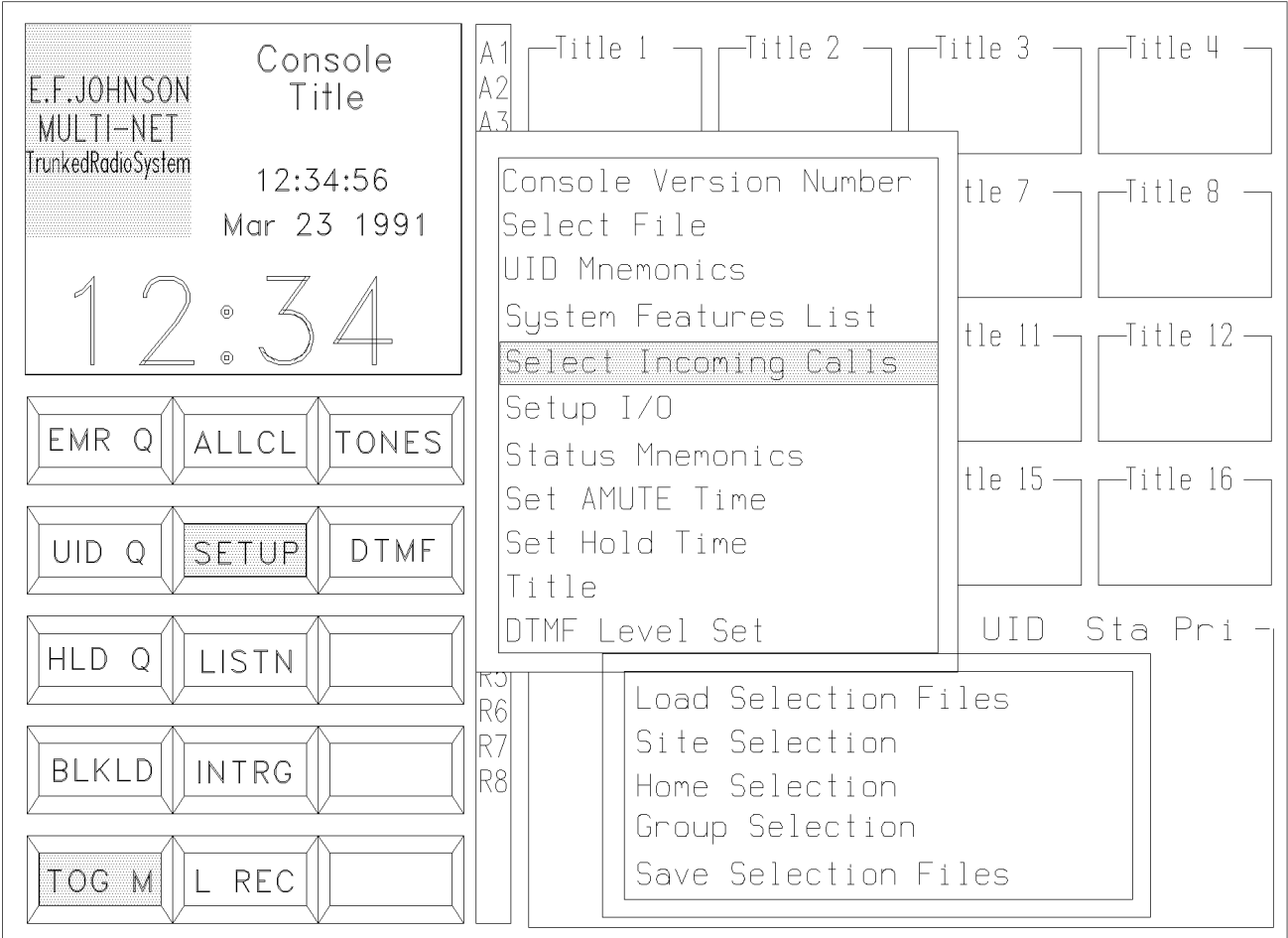
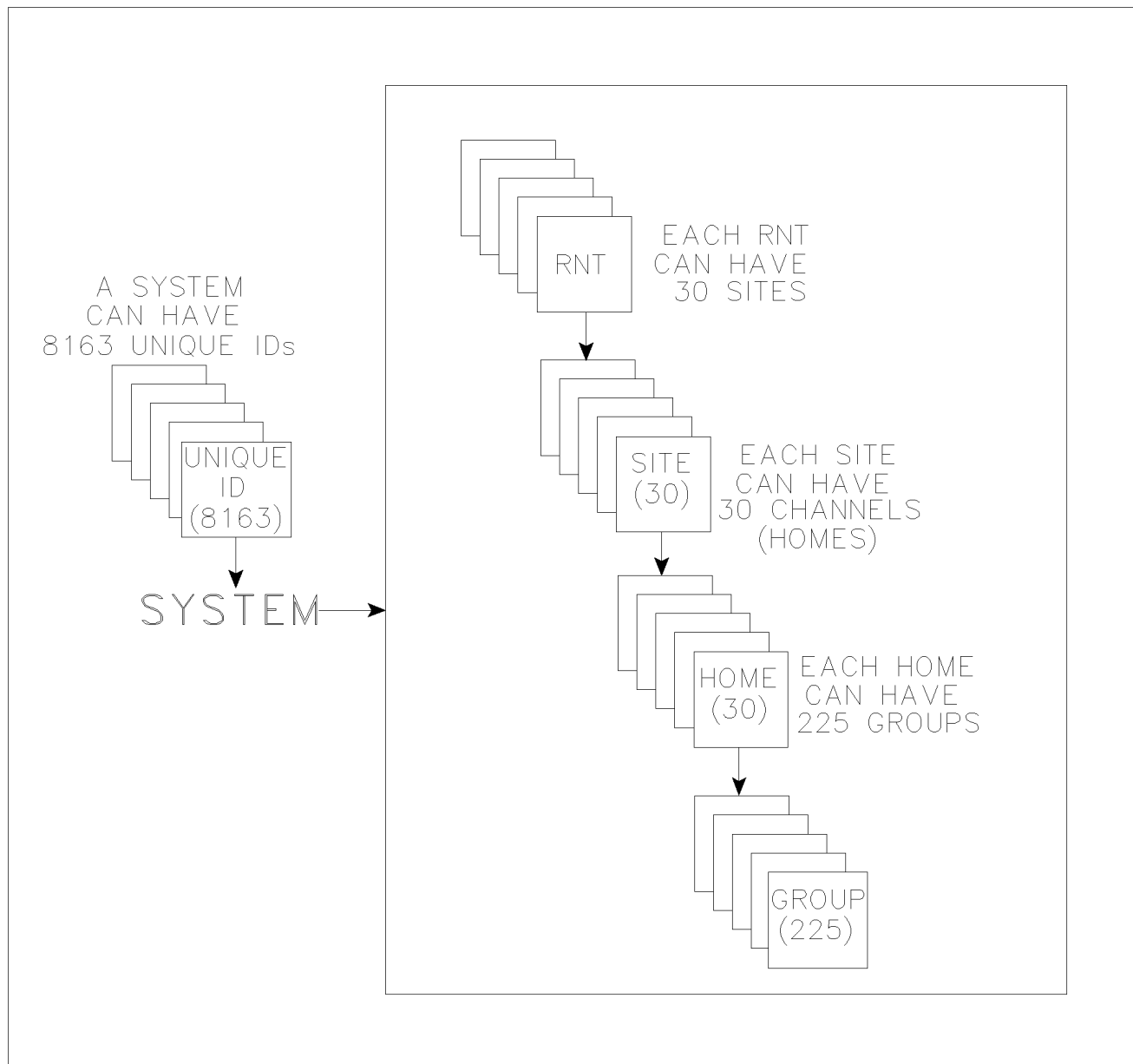


Figure 3-1    SETUP FUNCTION



**Figure 3-2 MULTI-NET SYSTEM BLOCK DIAGRAM**

## 3.2 SETUP CONSOLE CONFIGURATION

This setup configures functions and directories to allow the console to operate correctly. Not all of the possible features listed here may apply to your specific console. Basic console software (Multi-Net DCC software PN 023-9998-205) is loaded at the factory, options setup per sales order.

### 3.2.1 TITLE

Refer to Section 3.4.10 for changing the console's title.

### 3.2.2 SETUP TIMERS

Refer to Section 3.4.8 for setting the AMUTE Time and Section 3.4.9 for setting the Hold Time.

### 3.2.3 UID MNEMONICS

Refer to Section 3.4.3 for defining each UID.

### 3.2.4 STATUS MNEMONICS

Refer to Section 3.4.7 for defining each Status.

### 3.2.5 SETUP SITE, HOME, AND GROUP

The Sites, Home Channels and Groups to be used by the Console need to be enabled. These same Sites, Homes and Groups must be defined in the associated RNT. Refer to Section 3.4.5 for defining the Sites, Home Channels and enabling the associated Talk Groups.

### 3.2.6 SETUP CALL BLOCKS

Each Call Block used on the Console must be defined and should be saved to a file. Refer to Section 3.5 for defining the Call Block parameters.

### 3.2.7 PATCH

Patch is a feature that can be enabled or disabled (see Section 3.4.4). If this feature is enabled refer to Section 3.9 to create a Patch.

### 3.2.8 ALL CALL

All Call is a feature that can be enabled or disabled (see Section 3.4.4). Refer to Console Operator's Manual, Part No. 002-3039-272, for definition and usage instructions.

### 3.2.9 SCREEN SAVER

Screen Saver is a feature that can be enabled or disabled (see Section 3.4.4).

### 3.2.10 UID HOLD/TRANSFER

UID Hold/Transfer is a feature that can be enabled or disabled (see Section 3.4.4). Transfer is only used to connect Telco to UID or UID to Telco calls. Refer to Console Operator's Manual, Part No. 002-3039-272 for definition and usage instructions.

### 3.2.11 LISTEN

Listen is a function that allows the console operator to monitor the communication between another console and a mobile unit. Listen is a feature that can be enabled or disabled (see Section 3.4.4). Refer to Console Operator's Manual, Part No. 002-3039-272, for definition and usage instructions.

### 3.2.12 ALL MUTE

All Mute is a feature that can be enabled or disabled (see Section 3.4.4). Refer to Console Operator's Manual, Part No. 002-3039-272, for definition and usage instructions.

### 3.2.13 SINGLE MUTE

Single Mute is a feature that can be enabled or disabled (see Section 3.4.4). Refer to Console Operator's Manual, Part No. 002-3039-272, for definition and usage instructions.

### 3.2.14 ALARM INDICATOR

The Alarm indicators can be redefined and this feature can be enabled or disabled (see Section 3.4.4). Refer to Section 3.4.6 for definition and setup of the Alarm inputs.

### 3.2.15 RELAY CONTROL

The Relays can be defined to function normally open or normally closed. The redefining of the relays feature can be enabled or disabled (see Section 3.4.4). Refer to Section 3.4.6 for definition and setup of the Relay outputs.

### 3.2.16 INTERROGATE

Interrogate is a feature that can be enabled or disabled (see Section 3.4.4). Refer to Console Operator's Manual, Part No. 002-3039-272, for definition and usage instructions.

### 3.2.17 LOAD FILE

The loading of a file from any of the directories (Unique ID, DTMF, Block, Group, Tones and Telco) can be enabled or disabled (see Section 3.4.4).

### 3.2.18 SAVE/DELETE FILE

The saving of a new file or deleting of an existing file in a directory (Unique ID, DTMF, Block, Group, Tones and Telco) can be enabled or disabled (see Section 3.4.4).

### 3.2.19 COLOR

The Colors of the console display may be changed and is a feature that can be enabled or disabled (see Section 3.4.4). Refer to Section 3.11 for definition and setup instructions.

### 3.2.20 INCOMING UID

Incoming Unique ID calls is a feature that can be enabled or disabled (see Section 3.4.4).

### 3.2.21 INCOMING TELCO

Incoming Telco calls is a feature that can be enabled or disabled (see Section 3.4.4).

### 3.2.22 EMERGENCY QUEUE

Emergency Queue is a feature that can be enabled or disabled (see Section 3.4.4). Refer to Console Operator's Manual, Part No. 002-3039-272 for definition and usage instructions.

### 3.2.23 UNIQUE ID DIRECTORY

The Unique ID Directory consists of files of defined Unique IDs. This directory can be defined as Blocked, Limited or Unlimited (see Section 3.3). Refer to Section 3.7 for definition and setup instructions.

### 3.2.24 DTMF DIRECTORY

The DTMF Directory consists of files of defined DTMF tones. This directory can be defined as Blocked, Limited or Unlimited (see Section 3.3). The DTMF tones are transmitted to the mobiles only. Refer to Section 3.8 for definition and setup instructions.

### 3.2.25 BLOCK DIRECTORY

The Block Directory consists of files of defined Call Blocks. This directory can be defined as Blocked, Limited or Unlimited (see Section 3.3). Refer to Section 3.5 for definition and setup instructions.

### 3.2.26 GROUP DIRECTORY

The Group Directory consists of files of defined Talk Groups. This directory can be defined as Blocked, Limited or Unlimited (see Section 3.3). Refer to Section 3.6 for definition and setup instructions.

### 3.2.27 TONES DIRECTORY

The Tones Directory consists of files of defined Tones. This directory can be defined as Blocked, Limited or Unlimited (see Section 3.3). Refer to Section 3.10 for definition and setup instructions.

### 3.2.28 TELCO DIRECTORY

The Telco Directory consists of files of defined Telephone numbers. This directory can be defined as Blocked, Limited or Unlimited (see Section 3.3). Refer to Section 3.6 for definition and setup instructions.

### 3.3 BLOCKED / LIMITED / UNLIMITED

The use of the Directory functions can be configured or defined to be Blocked, Limited or Unlimited. If the directory is to be defined as Blocked nothing more needs to be defined. If Limited, each directory must be completely defined under Unlimited before being defined as Limited.

**Unlimited:** Anything can be changed in the use of this function by the Console Operator. An example is in TELCO; any of the 32 possible TELCO names and numbers assigned can be changed.

**Limited:** Use of this function is limited to the Console Operator. An example is in TELCO; only the first line of the 32 possible TELCO names and numbers can be changed. When the popup window appears, an "L" is displayed in the border on the upper right if the function has been defined as Limited. In this mode the first line should be reserved as a scratch pad line to handle any changes.

**Blocked:** This function has been disabled to the Console Operator. When a function is selected that has been Blocked, a popup window appears stating "This feature is BLOCKED. NO access is permitted".

### 3.4 SETUP FUNCTION

Select the SETUP icon key. If the SETUP icon is not present on the screen, press the TOG M key and then select the SETUP key.

*NOTE: The descriptions for setup are given for the custom keyboard. Refer to Section 2.2 for use of the computer keyboard and trackball mouse.*

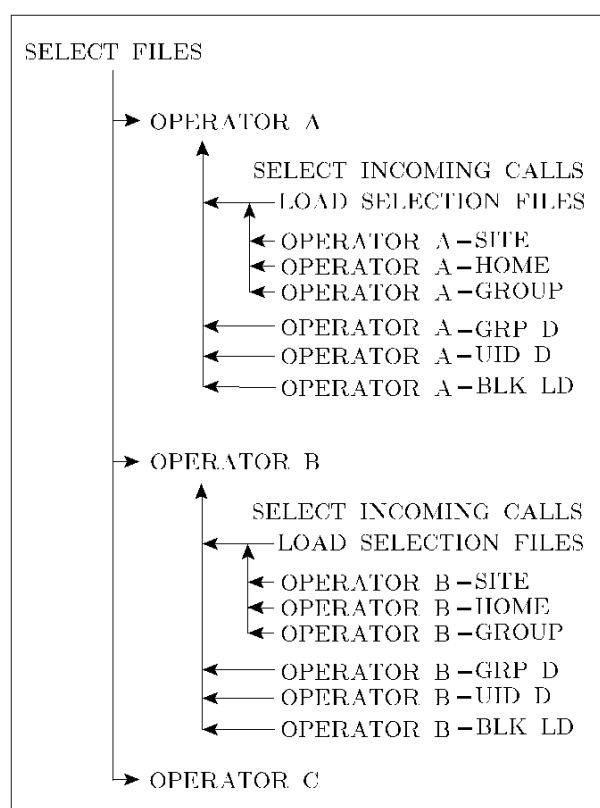
#### 3.4.1 CONSOLE VERSION NUMBER

1. Press the SETUP icon key.
2. Move the cursor bar to highlight Console Version Number and press Enter.
3. The Version popup window appears with the Revision number.
4. Press any key to clear popup window.

#### 3.4.2 SELECT FILES

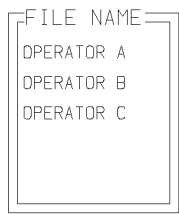
The select files command allows loading all files saved under the same file name. These files include: Group Directory, Unique ID Directory, Call Block, Site, Home and Group.

*NOTE: If the same file name is used to Save Files in all setup functions (Site, Home, Group, GRP D, UID D, BLK LD), when the Select Files icon key is pressed all setup functions with the same file name are loaded (see Figure 3-3).*



**Figure 3-3 SELECT FILES FLOWCHART**

1. Press the SETUP icon key.
2. Move the cursor bar to highlight SELECT FILES and press Enter.
3. The File Name popup window appears.
4. Highlight the file name to load and press Enter.



**Figure 3-4 FILE NAME POPUP**

**3.4.3 UNIQUE ID MNEMONICS**

This allows an alphanumeric mnemonic to be associated with each of the 8163 different Unique IDs.

1. Press the SETUP icon key.
2. Move the cursor bar to highlight UID MNEMONICS and press Enter. The UID Mnemonic popup window appears.
3. Enter in the desired UID to be labeled and press Enter.
4. The cursor automatically moves to the Mnemonics entry point.
5. Enter in the Mnemonic and press Enter.
6. The popup window automatically increments to the next UID and label this UID.
7. Repeat Steps 4 and 5 for consecutive UIDs.
8. Use the arrow keys to move to another UID or if large gap in UIDs occurs repeat starting at Step 3.

**3.4.4 SYSTEM FEATURES LIST**

The Consoles are purchased with some or all of the possible options offered. These options have been separated into 23 features (see Table 3-1). Each feature can be password protected once it is defined and configured. It is highly recommended the password function be used to safe guard against any inadvertent changes during the operation of the Console. The Features function allows Features 1 through 17 to be disabled or enabled.

Features 18 through 23 can be toggled between three modes; Blocked, Limited or Unlimited. When a feature is in Blocked Mode it is disabled. Limited Mode allows the Console Operator to change only the first entry of the directory. Unlimited Mode allows the Console Operator to change all or any part of an entry of the directory.

**Table 3-1 FEATURES LIST**

| FEATURE |                     |
|---------|---------------------|
| 1       | Patch               |
| 2       | All Call            |
| 3       | Screen Saver        |
| 4       | UID Hold/Transfer   |
| 5       | Last Received Queue |
| 6       | Listen              |
| 7       | All Mute            |
| 8       | Single Mute         |
| 9       | Alarm Indicator     |
| 10      | Relay Control       |
| 11      | Interrogate         |
| 12      | Load File           |
| 13      | Save File           |
| 14      | Color               |
| 15      | Incoming UID        |
| 16      | Incoming Telco      |
| 17      | Emergency Queue     |
| 18      | UID Directory       |
| 19      | DTMF Directory      |
| 20      | Block Directory     |
| 21      | Group Directory     |
| 22      | Tones Directory     |
| 23      | Telco Directory     |

1. Press the SETUP icon key.
2. Move the cursor bar to highlight SYSTEM FEATURE LIST and press Enter. The System Feature List popup window appears.
3. Move the cursor bar to highlight FEATURE LIST and press Enter. The Enter Password popup window appears.



**Figure 3-5 PASSWORD**



4. Type in the password or if a previous password has not been stored press the Enter key. The Feature List popup window appears.
5. Move the cursor to scroll through and highlight the desired feature to change. Pressing the Enter key toggles the feature between Enabled/Disabled or Blocked/Limited/Unlimited.
6. Repeat this for each feature to be changed.
7. Press the ESC key to exit and return to the System Feature List popup window. The entries are automatically saved when exiting.

### 3.4.5 SELECT INCOMING CALLS

1. To enter in a password or a new password, move the cursor to highlight NEW PASSWORD and press Enter. The New Password popup window appears if a password does not exist (see Step 12).



**Figure 3-6 NEW PASSWORD**

2. Type in the new password and press Enter. Verify New Password popup window appears.



**Figure 3-7 VERIFY NEW PASSWORD**

3. Type in the new password and press Enter. This confirms the new password and exits back to the System Feature List popup window.
4. Press the ESC key to exit the System Feature List popup window.
5. If a password already exists, the Enter Old Password popup window would have appeared. Type in the old password and press Enter. Now the New Password popup window appears and you can continue at Step 9.

### File Selection

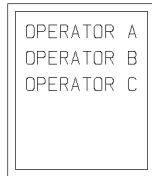
1. To **SAVE** this file with File Selection highlighted from the file menu press the **ENTER** key and the Load/Save File popup window appears.
2. Move the cursor to highlight SAVE TO NEW FILE and press Enter. The File Name popup window appears (see Figure 3-8).



**Figure 3-8 FILE NAME POPUP**

3. Type in the name of the file and press Enter. The file is saved and automatically exits to the Incoming Call popup window.
4. To **ADD** to an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
5. Move the cursor to highlight SAVE TO DIRECTORY FILE and press Enter. The Directory File popup window appears (see Figure 3-9).
6. Move the cursor to highlight the desired file and press Enter. The file is saved and automatically exits to the Incoming Call popup window.
7. To **LOAD** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
8. Move the cursor to highlight LOAD FILE and press Enter. The Directory File popup window appears (see Figure 3-9).
9. Move the cursor to highlight the desired file and press Enter. The file is loaded and automatically exits to the Incoming Call popup window.
10. To **DELETE** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
11. Move the cursor to highlight DELETE FILE and press Enter. The Directory File popup window appears (see Figure 3-9).

12. Move the cursor to highlight the desired file and press Enter. The file is deleted and automatically exits to the Incoming Call popup window.
13. To **EXIT** the Incoming Call popup window press the Escape (ESC) key.



**Figure 3-9 FILE NAME MENU**

**Site Selection**, enables all the sites in which the Home and Group of the mobiles to establish calls with are located. Refer to Figure 3-1 for the Setup screen. The popup screen in Figure 3-11 is selected in the setup menu. (See Save Selection Files.)

1. Press the SETUP icon key.
2. Move the cursor bar to highlight Select Incoming Calls and press Enter.
3. Move the cursor bar to highlight Site Selection and press Enter.
4. The Site popup window appears with sites that are enabled or disabled.
5. Move the cursor with the arrow keys to an empty box.
6. Type the number of the site to enable and press Enter. (There are 255 sites available.)
7. When all site entries have been made, press escape (ESC).

**Home Selection**, enables or disables the Home numbers assigned to a given site. Refer to Figure 3-1 for the Setup screen. The Popup screens in Figures 3-10 and 3-12 appear when Home Selection is selected in the setup menu. (See Save Selection Files.)

1. Press the SETUP icon key.
2. Move the cursor bar to highlight Select Incoming Calls and press Enter.
3. Move the cursor bar to highlight Home Selection and press Enter.
4. The Enter Site popup window appears (see Figure 3-10).



**Figure 3-10 SITE POPUP WINDOW**

5. Type the site number (1 to 255) where the Home is located and press Enter. (An invalid number displays an error message).
6. The Home popup window appears (see Figure 3-12).
7. Move the cursor using the arrow keys to highlight the Home number to Enable or Disable. The Home number in the popup window changes to indicate the selected number.
8. When the Home number is selected, press Enter to toggle the Enable or Disable of this Home.
9. Press Escape (ESC) to exit.

Enter Sites

|   |   |   |    |    |     |    |  |
|---|---|---|----|----|-----|----|--|
| 1 | 2 | 3 | 14 | 17 | 255 | 29 |  |
|   |   |   |    |    |     |    |  |
|   |   |   |    |    |     |    |  |
|   |   |   |    |    |     |    |  |

**Figure 3-11 SITE SELECTION**

Site 1  
Home 13  
0 30  
|  
1 DDDD  
2 DDD  
3 DEO  
4 DDD  
5 DDD  
6 DDD  
7 DDD  
8 DDD  
9 DDD

**Figure 3-12 HOME SELECTION**

Group Selection, enables or disables Groups for a given Site and Home. Refer to Figure 3-1 for the Setup screen. The Popup screens in Figures 3-13 and 3-14 appear when Site is entered in the setup menu. (See Save Selection Files.)

1. Press the SETUP icon key.
2. Move the cursor bar to highlight Select Incoming Calls and press Enter.
3. Move the cursor bar to highlight Group Selection and press Enter.

4. The Enter Site popup window appears.

Enter Site 1

Enter Home 2

**Figure 3-13 SITE AND HOME POPUP WINDOW**

5. Type Site number (1 to 255) and press Enter.
6. The Home popup window appears.
7. Type Home number (1-30) and press Enter. (An invalid number displays an error message.)

8. The popup window shows all 256 Groups.

NOTE: Groups 1-225 are available Groups. 226 to 256 are reserved by the system and normally disabled.

9. Move the cursor using the arrow keys to the position of the Group number.
10. Press Enter to toggle between Enable/Disable.

11. Press Escape (ESC) to exit.

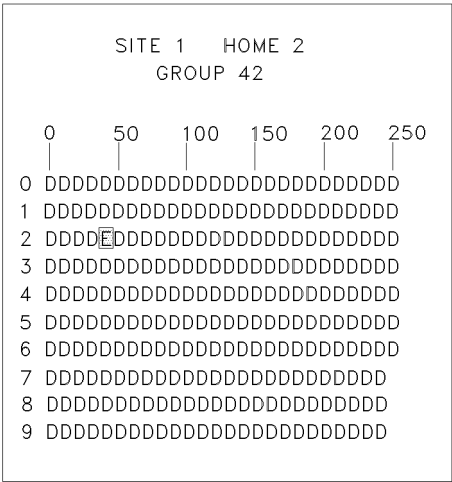


Figure 3-14 GROUP SELECTION POPUP WINDOW

3.4.6 SETUP INPUT/OUTPUT CONTACTS

The Input contacts are for warning or alarm indications. There are three modes of indication for the eight possible alarms: Non-Alarm, Alarm and Alarm with Tone. Each alarm can be defined with a mnemonic label at the time the alarm is setup. Refer to Figure 3-1 for the Setup screen.

| Mode         | Indication         |
|--------------|--------------------|
| Alarm        | Visual Only        |
| Alarm w/Tone | Visual and Audible |
| Non-Alarm    | Monitoring Visual  |

The Output contacts are the opening and closing of a relay. There are two modes of closing the 8 available relays: Toggle or Non-Toggle. Each alarm can be defined with a mnemonic label at the time the alarm is setup. Refer to Figure 3-1 for the Setup screen.

In the Toggle Mode, once the associated keys are pressed the relay closes and remains closed until the associated keys are pressed again.

In the Non-Toggle Mode, once the associated keys are pressed the relay closes and remains closed as long as the keys are pressed.



Figure 3-15 SETUP I/O

Input Setup

1. Press the SETUP icon key.
2. Move the cursor bar to highlight SETUP I/O and press Enter. The Setup I/O popup window appears (see Figure 3-15).
3. Move the cursor bar to highlight Alarm Setup and press Enter. The Alarm Setup popup window appears (see Figure 3-16).

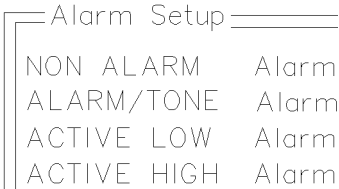


Figure 3-16 ALARM SETUP

4. Move the cursor bar to highlight the desired alarm to change. Pressing the Enter key toggles between the three different modes: Non-Alarm, Alarm, and Alarm with Tone.
5. Press the ESC key to exit and return to the Setup I/O popup window. The entries are automatically saved when exiting.

Output Setup

1. Move the cursor bar to highlight Relay Setup and press Enter. The Relay Setup popup window appears (see Figure 3-17).

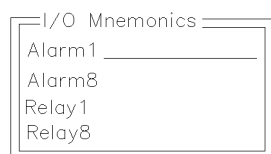


Figure 3-17 RELAY SETUP

2. Move the cursor bar to highlight the desired relay to change. Pressing the Enter key toggles between the two different modes.
3. Press the ESC key to exit and return to the Setup I/O popup window. The entries are automatically saved when exiting.

### Mnemonics Setup

1. Move the cursor bar to highlight Mnemonic's Setup and press Enter. The Mnemonic's Setup popup window appears (see Figure 3-18).



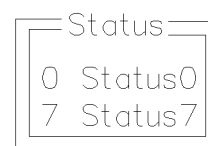
**Figure 3-18 MNEMONICS SETUP**

2. Move the cursor bar to highlight the desired alarm or relay to define. Type in the desired title.
3. Press the ESC key to exit and return to the Setup I/O popup window. The entries are automatically saved when exiting.
4. Press the ESC key to exit the Setup I/O popup window.

### 3.4.7 STATUS MNEMONICS

This allows an alphanumeric mnemonic to be associated with the status codes received from the field units. Refer to the mobile control head programming for Status Mnemonics.

1. Press the SETUP icon key.
2. Move the cursor bar to highlight STATUS MNEMONICS and press Enter. The Status popup window appears.
3. Move the cursor to the status number and type the mnemonic (8 characters) in the window.
4. Press ESC to exit and save the entries.



**Figure 3-19 STATUS MNEMONICS**

### 3.4.8 SET AMUTE TIME

This sets the All Mute function time-out.

1. Press the SETUP icon key.
2. Move the cursor bar to highlight Set AMUTE Time and press Enter.
3. A popup window appears requesting up to two digits of time-out. The time is from 0 to 99 seconds. Press Enter, the window disappears.



**Figure 3-20 MUTE**

### 3.4.9 SET HOLD TIME

This sets the time for the Hold function.

1. Press the SETUP icon key.
2. Move the cursor bar to highlight Set Hold Time and press Enter.
3. A popup window appears requesting up to three digits of hold time (0 to 255 seconds).



**Figure 3-21 HOLD**

4. Press Enter, the window disappears. If invalid numbers are entered an error window appears.

3.4.10 TITLE

This allows the console title at the upper left of the screen to be modified (see Figure 3-1).

1. Press the SETUP icon key.
2. Move the cursor bar to highlight Title and press Enter. The title box is highlighted.
3. Type the title change in the window. (2 lines of up to 11 alphanumeric characters each.)
4. Press ESC to exit and save the new Title.

3.4.11 DTMF LEVEL SET

1. Press the SETUP icon key.
2. Move the cursor bar to highlight DTMF Level Set and press Enter.
3. A DTMF digit is generated to the IDM card for console alignment.
4. Press any key to clear.

3.5 BLOCK LOAD FUNCTION

The Block Load (BLK LD) function is a directory consisting of files containing definitions of the 16 Call Blocks. The Block Load function allows the console manager to set the Title, Site, Home, and Group for each of the 16 Call Blocks. If a Call Block is not set up with a valid value for the Site, Home and Group ID, an error message is displayed.

Once the file is created, the file is saved in the directory. Each file is created to represent a Call Block layout for a different call scenario. The only limit to the number of files in this directory is the available space on the hard disk.

The console manager is now able to select a file by scrolling the file names in the directory menu, highlighting the desired file and pressing the Enter key. This file is automatically loaded and displayed on the console. To exit the Block Load function, press the Escape (ESC) key.

3.5.1 BLOCK LOAD SETUP

NOTE: If the BLKLD icon is not present on the screen, press the TOG M icon key.

1. Press the BLK LD icon key. The Popup screen in Figure 3-22 appears.

|   | OPERATOR A | SITE | HOME | GID | PRI | HANG | H  | S  | U  |
|---|------------|------|------|-----|-----|------|----|----|----|
| 1 | Chief      | 1    | 4    | 5   | 2   | 0    | 30 | 30 | 30 |
| 2 | Engine Co. | 1    | 4    | 3   | 3   | 0    | 30 | 30 | 30 |
| 3 | Ladder Co. | 1    | 4    | 10  | 3   | 0    | 30 | 30 | 30 |
| 4 |            |      |      |     |     |      |    |    |    |
| 5 |            |      |      |     |     |      |    |    |    |
| 6 |            |      |      |     |     |      |    |    |    |

Figure 3-22 BLOCK LOAD FUNCTION

2. Move the cursor to highlight the line for the Call Block. Type the Title for this block or press the right arrow key if no title is assigned.
3. Using the right arrow key, move the cursor and type the Site (1-255), Home (1-30), Group (1-256), Priority (1-5), Hang Time (1-255 sec.), Headset Volume Setting (0-96), Select Audio Volume Setting (0-96) and Unselect Audio Volume Setting (0-96) for the Call Block.

NOTE: The priority is the transmit priority for the console transmit. A supervisory console may be established by having the priorities set at least 1 higher than the priorities on the other consoles. Whenever the supervisory console transmits it will override other consoles, even if the other consoles are transmitting on the same Group.

4. Repeat Sets 2 and 3 until each desired Call Block has been created.

NOTE: To clear an existing Call Block return all parameters to "0".

5. To **SAVE** this file press the LOAD/SAVE FILE key and the Load/Save File popup window appears.
6. Move the cursor to highlight SAVE TO NEW FILE and press Enter. The File Name popup window appears (see Figure 3-23).



**Figure 3-23 FILE NAME POPUP**

7. Type in the name of the file and press Enter. The file is saved and automatically exits to the Block Load popup window.
8. To **ADD** to an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
9. Move the cursor to highlight SAVE TO DIRECTORY FILE and press Enter. The Directory File popup window appears (see Figure 3-25).
10. Move the cursor to highlight the desired file and press Enter. The file is saved and automatically exits to the Block Load popup window.
11. To **LOAD** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
12. Move the cursor to highlight LOAD FILE and press Enter. The Directory File popup window appears (see Figure 3-25).
13. Move the cursor to highlight the desired file and press Enter. The file is loaded and automatically exits to the Block Load popup window.
14. To **DELETE** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
15. Move the cursor to highlight DELETE FILE and press Enter. The Directory File popup window appears (see Figure 3-25).
16. Move the cursor to highlight the desired file and press Enter. The file is deleted and automatically exits to the Block Load popup window.
17. To **EXIT** the Block Load popup window press the Escape (ESC) key.

### 3.6 GROUP DIRECTORY FUNCTION

*NOTE: If the GRP D icon is not present on the screen, press the TOG M icon key.*

The Group Directory (GRP D) function consists of files that contain the definition of up to 32 Talk Groups. The Group Directory function allows the console manager to set the Title, Site, Home, and Group for each of the Talk Groups. If a Talk Group is not set up with a valid value for the Site (1-255), Home (1-30), and Group ID (1-255) an error message is displayed.

Once the file is created, the file is saved in the directory. Each file is created to represent the different Talk Groups for a different configuration. The only limit to the number of files in this directory is the available space on the hard disk.

The console manager is now able to select a file by scrolling the file names in the directory menu, highlighting the desired file and pressing the Enter key. This file is automatically loaded and displayed on the console. To exit the Group Directory function, press the Escape (ESC) key.

#### 3.6.1 GROUP DIRECTORY SETUP

1. Press the GRP D icon key. The Group directory is displayed in a popup window (see Figure 3-24).
2. Move the cursor to highlight the line for the entry.
3. Type the name for this Group or press the right arrow key if no name is assigned.
4. Using the right arrow key to move the cursor, type the Site (1-255), Home (1-30), Group ID (1-255), Priority (1-5) and Hang Time (1-255 sec.) for the Group.
5. Repeat Steps 2, 3 and 4 until each desired Group has been created.

*NOTE: To clear an existing Call Block return all parameters to "0".*

|   | OPERATOR A | SITE | HOME | GID | PRI | HANG | P |
|---|------------|------|------|-----|-----|------|---|
| 1 | FIRE       | 1    | 4    | 5   | 5   | 0    | 1 |
| 2 | RESCUE     | 1    | 7    | 3   | 1   | 0    | 1 |
| 3 | POLICE     | 1    | 3    | 10  | 2   | 0    |   |
| 4 | SHERIFF    | 1    | 5    | 7   | 5   | 120  |   |
| 5 |            |      |      |     |     |      |   |
| 6 |            |      |      |     |     |      |   |

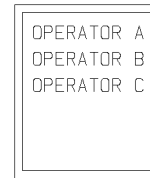
**Figure 3-24 GROUP DIRECTORY FUNCTION**

6. To **SAVE** this file press the LOAD/SAVE FILE key and the Load/Save File popup window appears.
7. Move the cursor to highlight SAVE TO NEW FILE and press Enter. The File Name popup window appears (see Figure 3-23).
8. Type in the name of the file and press Enter. The file is saved and automatically exits to the Group Directory popup window.
9. To **ADD** to an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
10. Move the cursor to highlight SAVE TO DIRECTORY FILE and press Enter. The Directory File popup window appears (see Figure 3-25).
11. Move the cursor to highlight the desired file and press Enter. The file is saved and automatically exits to the Group Directory popup window.
12. To **LOAD** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
13. Move the cursor to highlight LOAD FILE and press Enter. The Directory File popup window appears (see Figure 3-25).
14. Move the cursor to highlight the desired file and press Enter. The file is loaded and automatically exits to the Group Directory popup window.
15. To **DELETE** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.

16. Move the cursor to highlight DELETE FILE and press Enter. The Directory File popup window appears (see Figure 3-25).

17. Move the cursor to highlight the desired file and press Enter. The file is deleted and automatically exits to the Group Directory popup window.

18. To **EXIT** the Group Directory popup window press the Escape (ESC) key.



**Figure 3-25 FILE NAME MENU**

### 3.7 UNIQUE ID DIRECTORY FUNCTION

*NOTE: If the UID D icon is not present on the screen, press the TOG M icon key.*

The Unique ID Directory (UID D) function consists of files that contain the definition of up to 32 Unique IDs. The Unique ID Directory function allows the console manager to set Name, Unique ID and the Priority for each of the Unique IDs.

Once the file is created, the file is saved in the UID directory. Each file is created to represent the different Unique IDs of different individuals or mobiles. The only limit to the number of files in this directory is the available space on the hard disk.

The Console Manager is now able to select a file by scrolling the file names in the directory menu, highlighting the desired file and pressing the Enter key. This file is automatically loaded and displayed on the console. To exit the Unique ID Directory function, press the Escape (ESC) key.

*NOTE: A console may call another console via the Unique ID of the desired console. This provides for a private intercom function.*



### 3.7.1 UNIQUE ID DIRECTORY SETUP

1. Press the UID D icon key. The Unique ID directory is displayed in a popup window (Figure 3-26).

|   | OPERATOR A | UID  | PRI |
|---|------------|------|-----|
| 1 | CHIEF      | 2525 | 1   |
| 2 | ENGINE CO. | 1525 | 2   |
| 3 | LADDER CO. | 8163 | 2   |
| 4 |            | 1010 | 3   |
| 5 |            |      |     |
| 6 |            |      |     |

**Figure 3-26 UNIQUE ID DIRECTORY FUNCTION**

2. Move the cursor to highlight the desired entry line.
3. Type the name for this UID or press the right arrow key if no name is assigned.
4. Press the Enter key or the right arrow key to move the cursor, type the Unique ID number (1-8163) and Priority (1-5).
5. Repeat Steps 2, 3 and 4 until each desired Unique ID has been created.

NOTE: To clear an existing Unique ID return all parameters to "0".

6. To **SAVE** this file press the LOAD/SAVE FILE key and the Load/Save File popup window appears.
7. Move the cursor to highlight SAVE TO NEW FILE and press Enter. The File Name popup window appears (see Figure 3-27).
8. Type in the name of the file and press Enter. The file is saved and automatically exits to the Unique ID Directory popup window.

File Name  
OPERATOR A

**Figure 3-27 FILE NAME POPUP**

9. To **ADD** to an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
10. Move the cursor to highlight SAVE TO DIRECTORY FILE and press Enter. The Directory File popup window appears (see Figure 3-28).

OPERATOR A  
OPERATOR B  
OPERATOR C

**Figure 3-28 FILE NAME MENU**

11. Move the cursor to highlight the desired file and press Enter. The file is saved and automatically exits to the Unique ID Directory popup window.
12. To **LOAD** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
13. Move the cursor to highlight LOAD FILE and press Enter. The Directory File popup window appears (see Figure 3-28).
14. Move the cursor to highlight the desired file and press Enter. The file is loaded and automatically exits to the Unique ID Directory popup window.
15. To **DELETE** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
16. Move the cursor to highlight DELETE FILE and press Enter. The Directory File popup window appears (see Figure 3-28).
17. Move the cursor to highlight the desired file and press Enter. The file is deleted and automatically exits to the Unique ID Directory popup window.
18. To **EXIT** the Group Directory popup window press the Escape (ESC) key.

### 3.8 DTMF DIRECTORY FUNCTION

*NOTE: If the DTMF icon is not present on the screen, press the TOG M icon key.*

The DTMF Directory (DTMF D) function consists of files that contain the definition of up to 32 DTMF groups. The DTMF Directory function allows the Console Manager to set the Title and DTMF group. Each of the DTMF groups consists of up to 10 DTMF digits.

Once the file is created, the file is saved in the Group directory. Each file can be created and saved to represent the different Talk Groups for a different configuration. The only limit to the number of files in this directory is the available space on the hard disk.

The Console Manager is now able to select a file by scrolling the file names in the directory menu, highlighting the desired file and pressing the Enter key. This file is automatically loaded and displayed on the console. To exit the Group Directory function, press the Escape (ESC) key.

#### 3.8.1 DTMF DIRECTORY SETUP

1. Press the DTMF icon key. The DTMF Directory popup window appears (see Section 3.2.24).
2. Move the cursor to highlight the line for the entry.
3. Type the name for this DTMF group or press the right arrow key if no name is assigned.
4. Press the Enter key to move the cursor to the digits. Type in the DTMF group (1-10) desired. Press the Enter key to move to the next entry.
5. Repeat Steps 2, 3 and 4 until each desired Unique ID has been created.

*NOTE: To clear an existing DTMF group return all parameters to "0".*

6. To **SAVE** this file press the LOAD/SAVE FILE key and the Load/Save File popup window appears.

7. Move the cursor to highlight SAVE TO NEW FILE and press Enter. The File Name popup window appears (see Figure 3-27).
8. Type in the name of the file and press Enter. The file is saved and automatically exits to the DTMF Directory popup window.
9. To **ADD** to an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
10. Move the cursor to highlight SAVE TO DIRECTORY FILE and press Enter. The Directory File popup window appears (see Figure 3-28).
11. Move the cursor to highlight the desired file and press Enter. The file is saved and automatically exits to the DTMF Directory popup window.
12. To **LOAD** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
13. Move the cursor to highlight LOAD FILE and press Enter. The Directory File popup window appears.
14. Move the cursor to highlight the desired file and press Enter. The file is loaded and automatically exits to the DTMF Directory popup window.
15. To **DELETE** an existing file press the LOAD/ SAVE FILE key and the Load/Save File popup window appears.
16. Move the cursor to highlight DELETE FILE and press Enter. The Directory File popup window appears (see Figure 3-28).
17. Move the cursor to highlight the desired file and press Enter. The file is deleted and automatically exits to the DTMF Directory popup window.
18. To **EXIT** the Group Directory popup window press the Escape (ESC) key.

### 3.9 PATCH FUNCTION

*NOTE: If the PATCH icon is not present on the screen, press the TOG M icon key.*

The patch function can contain up to 16 separate patches, each consists of 2 to 8 entries. This function allows the selection of 2 to 8 entries to communicate that normally cannot talk to one another. An entry is a Call Block, Group or Other. Other is a call block or group from another console.

A Call Block, Group or Other can be associated with only one patch (see Figure 3-29).

**NOTE:** The actual number of patches available is dependent on the number of enabled Group Patch Modules (GPMs) in the Radio Network Terminal (RNT).

| Site           | Home       | Group |
|----------------|------------|-------|
| Patch Number 1 |            |       |
| 1              | Block Name | Block |
| 2              | Block Name | Block |
| Patch Number 2 |            |       |
| 1              | Block Name | Block |
| 2              | Group Name | Group |
| 3              | Group Name | Other |

**Figure 3-29 SETUP PATCH**

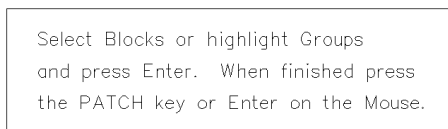
### 3.9.1 PATCH SETUP

1. Press the PATCH icon key. The Patch function popup window appears (see Figure 3-30).



**Figure 3-30 SETUP PATCH WINDOW**

2. Move the cursor to highlight SETUP PATCH and press Enter. The Patch Instructional popup window appears (see Figure 3-31).



**Figure 3-31 PATCH INSTRUCTIONAL WINDOW**

3. Press the Call Block key associated with each call block to be included in this patch. As each call block is selected an "\*" appears on the left border of the call block.



**Figure 3-32 CALL BLOCK**

4. If Groups are to be included in the patch, press the GRP D icon key. The Group Directory popup window appears (see Figure 3-24).
5. Move the cursor to highlight the Group to be included in the patch. As the group is selected an "\*" appears in the column marked "P".
6. Exit the Group Directory popup window by pressing the Escape (ESC) key.
7. After all the entries for this patch have been selected press the PATCH icon key. The patch number assigned this patch will now be displayed in place of the "\*" by all the entries involved.
8. An Error popup window appears if the patch fails to be setup.

9. Repeat Steps 1 through 7 for each patch required.

### 3.9.2 VIEW/DELETE PATCH



**Figure 3-33 VIEW/DELETE PATCH WINDOW**

10. Press the PATCH icon key. The Patch function popup window appears (see Figure 3-30).
11. Move the cursor to highlight View/Delete Patch and press Enter. The Patch popup window appears (see Figure 3-29) displaying the current status of all the 16 possible patches.

- To only view the current patches, scroll the patches up or down as needed.
- To exit the View/Delete Patch popup window press the Escape (ESC) key.
- To delete an entire patch, move the cursor to highlight the Patch Number and press Enter.
- To delete a single entry of a patch, move the cursor to highlight the entry and press Enter.
- To exit the Patch function popup window press the Escape (ESC) key.

**3.9.3 ADD TO A PATCH**



**Figure 3-34 ADD TO PATCH WINDOW**

- Press the PATCH icon key. The Patch function popup window appears (see Figure 3-30).
- Move the cursor to highlight ADD TO PATCH and press Enter.
- The Patch popup window appears (see Figure 3-29) displaying the current status of all the 16 possible patches.
- Move the cursor to highlight the Patch Number desired and press the Enter key. The Patch popup window disappears.
- Select the additional Call Block or Group to be added to the active patch. This is done by pressing the desired Call Block key or by highlighting the desired Group in the Group Directory and press the Enter key. The Patch number appears on the left border of the Call Block or in the column marked "P" of the desired Group.
- To exit the Patch function popup window press the Escape (ESC) key.

**3.10 TONES FUNCTION**

Refer to Figure 3-35 for an example of tones and pause strings.

*NOTE: If the TONES icon is not present on the screen, press the TOG M icon key.*

|   | TONE        | TONE Number    |
|---|-------------|----------------|
| 1 | Tone Name 1 | 25             |
| 2 | Tone Name 2 | 47,,27,,45,,67 |
| 3 | Tone Name 3 | 333333666      |
| 4 |             |                |
| 5 |             |                |
| 6 |             |                |

**Figure 3-35 TONES POPUP WINDOW**

The tones function is used to transmit different alert tones or tones and pause combinations from the console. The maximum length and string of tones/pauses is 30 characters. Tones are entered by the Tone Number and a comma "," represents a pause (See Table 3-2). Each character is 150 milliseconds long and can be duplicated to create different time durations of tones and pauses. The maximum number of Tone Names is 32 with 10 characters maximum for each name.

**Table 3-2 TONE NUMBERS**

| Frequency Number | Frequency in Hz |
|------------------|-----------------|
| 0                | 697             |
| 1                | 770             |
| 2                | 852             |
| 3                | 941             |
| 4                | 1209            |
| 5                | 1336            |
| 6                | 1477            |
| 7                | 1633            |

**3.10.1 SETUP TONES**

- Select the TONES icon and press Enter. On the custom keyboard press the TONES icon key.
- Move the cursor to highlight the number for the Tone Name.

3. Enter the name of the mnemonic or reference for this tone string and press Enter.
4. Enter the tone string. Refer to the example in Figure 3-35. The following are descriptions of the strings shown in the example:

TONE 1 is named "Tone Name1" (maximum of 10 characters). The tone sequence is 25. When TONE 1 is selected and the PTT pressed, 852 Hz is transmitted for 150 milliseconds and 1336 Hz is transmitted for 150 milliseconds. The transmitter then stays keyed to allow the operator to give the message after the tones. Press the PTT to disable the transmitter.

TONE 2 is named "Tone Name2". The tone sequence is 47,,27,,45,,67. When TONE 2 is selected and the PTT pressed, 1209 Hz is transmitted for 150 milliseconds, 1633 Hz for 150 milliseconds, pause for 300 milliseconds, 852 Hz for 150 milliseconds, 1633 Hz for 150 milliseconds, pause for 300 milliseconds, 1209 Hz for 150 milliseconds, 1336 Hz for 150 milliseconds, pause for 300 milliseconds, 1477 Hz for 150 milliseconds and 1633 Hz for 150 milliseconds. The transmitter then stays keyed to allow the operator to give the message after the tones. Press the PTT to disable the transmitter.

TONE 3 is named "Tone Name3". The tone sequence is 333333666. When TONE 3 is selected and the PTT pressed, 941 Hz is transmitted for 900 milliseconds and then 1477 Hz

for 450 milliseconds. The transmitter then stays keyed to allow the operator to give the message after the tones. Press the PTT to disable the transmitter.

After all the tone names and strings have been entered, exit the Tones function by pressing the escape (ESC) key or this setup can now be placed in a file for future reference. Refer to Save Selection Files on page 6 for information on how to save files. On the custom keyboard press the SAVE FILE key.

To exit the tones function press the escape (ESC) key.

### 3.11 COLOR CHANGES

The colors on the display may be changed. The color palette window is activated by pressing the COLOR key on the custom keyboard. Colors cannot be activated or manipulated with the mouse.

*NOTE: The different windows are interrelated.*

When using the normal keyboard use the keys as defined in the window's border to manipulate the colors. The custom keyboard uses the same keys with some exceptions, see Table 3-3.

**Table 3-3 KEYBOARD FUNCTIONS**

| Function         | Keyboard  |         |
|------------------|-----------|---------|
|                  | Standard  | Custom  |
| RGB Up           | PgUp      | Shift ↑ |
| RGB Down         | PgDn      | Shift ↓ |
| Move Window Up   | Ctrl PgUp | Ctrl ↑  |
| Move Window Down | Ctrl PgDn | Ctrl ↓  |
| Save             | End       | Ctrl E  |
| Defaults         | Home      | Ctrl H  |



SECTION 4 ENCRYPTION

4.1 MODIFYING EXISTING FILES

Before using the Encryption option, any saved Call Block and UID files must be converted. A utility on the Console installation disk has been provided to change these files.

To use the utility:

- 1. Copy the **modify.exe** file from the Console installation disk to the Console directory on the hard drive.
- 2. Type **modify**, then press Enter.

The modified files will be loaded when the Console is started. The old Call Block files are saved as <filename>.**bak** and the old UID files are saved as <filename>.**old**. The encryption mode will be Clear in all files.

|   | OPERATOR   | A | STE | HME | GID | P | E | CD | HNG | H  | S  | U  |
|---|------------|---|-----|-----|-----|---|---|----|-----|----|----|----|
| 1 | Chief      |   | 1   | 4   | 5   | 2 | E | 16 | 0   | 30 | 30 | 30 |
| 2 | Engine Co. | 1 |     | 4   | 3   | 3 | C | 15 | 0   | 30 | 30 | 30 |
| 3 | Ladder Co. | 1 |     | 4   | 10  | 3 | C | 14 | 0   | 30 | 30 | 30 |
| 4 |            |   |     |     |     |   |   |    |     |    |    |    |
| 5 |            |   |     |     |     |   |   |    |     |    |    |    |
| 6 |            |   |     |     |     |   |   |    |     |    |    |    |

Figure 4-1 BLOCK DIRECTORY

4.2 BLOCK DIRECTORY

The functions of Block Directory are as described in Section 3.5, with the addition of two encryption fields (see Figure 4-1). The field for encryption mode (E) contains the encryption mode for the Call Block. The encryption code field (CD) contains the encryption code (1-16) for the Call Block. The encryption codes correspond to hexadecimal values 0-F and control the encryption module select lines.

4.3 UNIQUE ID DIRECTORY SETUP

The Unique ID Directory operates as described in Section 3.7.1, with the addition of the encryption mode field. The "E" denotes encrypted transmissions and "C" means transmission is in clear mode (see Figure 4-2).

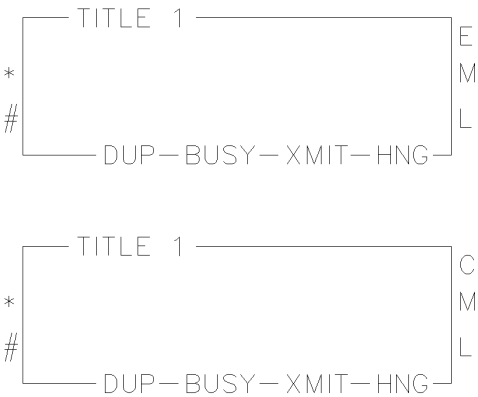


Figure 4-2 ENCRYPTION TITLE BLOCK





## SECTION 5 911 INTERFACE

### 5.1 MICROPHONE INPUTS

The 911 interface module has three microphone inputs: Desk, Console Operator, and Supervisor.

The Operator and Supervisor microphones are 1/4 inch jacks with headsets that plug into a jackbox. An operator and supervisor can both listen to an incoming phone call at the same time, but only one microphone can be live. The operator's microphone is normally active, but the supervisor's microphone can intercede when the supervisor PTT or the supervisor takeover is used.

The desk microphone is wired to two of the PC board termination blocks. It can be used only when the operator microphone jack is unplugged. The desk microphone will then function as the operator microphone. Also, when the desk microphone is active, audio to the 911 console is muted.

### 5.2 MICROPHONE OUTPUTS

The microphone audio is routed to four outputs: Console Microphone, Auxiliary, 911 Audio Output, and PA Output.

Console microphone output is active when either the operator or supervisor PTT is active or when the paging enable is activated. When paging enable is active, both microphones are muted and paging encoder is routed to the console mic output.

Auxiliary output is always active when the microphone audio is active.

911 audio output is active when the 911 active logic input is active and neither PTT, PA Enable, or Paging Enable is active. With jumper programming, the PC board can allow 911 audio output to stay active, regardless of the states of the PTTs and enables. The exception is when the desk microphone option is used, this mutes the 911 audio out and the 911 recorder output.

The PA output is active when PA Enable is active.

An active low, open collector PTT output is provided to the console PTT input, which is an "OR" connection of the PTT and Paging Enable.

### 5.3 OPERATOR AND SUPERVISOR EAR OUTPUTS

The operator and supervisor ear outputs sum together four inputs: Console Audio, Instant Recall, Intercom and the Incoming Phone Call (911 Audio Input). Both ear outputs are always live during the 911 call. 911 audio input is controlled by 911 Active and has a four position volume control switch (S1) on the jack box.

911 Recorder Output provides a recording for both microphone and earpiece audio.

Select Speaker Audio (output) is routed to this module. Jumper programming allows the Select Audio to be; always off, always on, or becomes active when 911 Active becomes live. This allows for console audio to be switched from the headsets to the select speaker during 911 calls. In addition, using jumper programming again, the select speaker audio can be enabled whenever the operator's jack is unplugged (used then with the desk microphone).

### 5.4 CIRCUIT DESCRIPTION

#### 5.4.1 GENERAL

The 911 Interface module is used with the TRACER console to provide an interface to a 911 console, the building PA system, an instant recall recorder, an intercom system, plus provides ability for a dispatcher supervisor to take over operation of the console.

#### 5.4.2 INPUTS

All audio inputs to the 911 Interface module are balanced inputs and provide for input impedances of 120, 620 or 910 ohms by plug-in jumper programming. In addition, selection of 300 or 3.9k ohm impedance with a bias voltage of 2.5V or 620 ohms with a bias voltage of 12V is provided with plug-in

jumper programming. Separate gain adjust trim potentiometers are provided for each audio input. All PTT inputs are active low with pull-up resistors to 5V. The 911 audio input is transformer coupled for added hum protection.

### 5.4.3 HEADSETS

Headsets are Plantronics type with noise reduction boom microphone (with wind screen) and a single earpiece (with cushion). The headband is fully adjustable. A stress relief clip (or clothes clip) provides tension relief from the headset assembly. The stress relief clip is adjustable anywhere between the headset assembly and approximately four feet down the length of the cord. Each headset cord is coiled with a ten foot extended length. The end connector is a plug-prong type with tip-sleeve ends.

### 5.4.4 TELEPHONE/HEADSET INTERFACE

A Telephone/Headset Interface enables the operator to use a headset for both radio and telephone operation. When a telephone line is selected, the selected channel audio is automatically transferred to the selected speaker and the headset microphone and earpiece are connected to the telephone. If communication on a radio circuit is necessary, the telephone transmit audio to the caller is automatically suspended when the transmit switch is pressed and the headset microphone audio is transferred to the radio circuit. The telephone caller does not hear the radio transmissions.

### 5.4.5 CONTROL INPUTS

Other control inputs can be configured for active high or active low by plug-in jumper programming. When configured for active low, pull-up resistors are provided to 5V.

The 911 Interface module provides the following inputs:

1. Operator's Microphone (audio input)
2. Desk Microphone (audio input)
3. Supervisor's Microphone (audio input)

4. 911 Audio (audio input from a 911 console)
5. Console Audio (audio input from the TRACER console)
6. Instant Recall (from an instant recall recorder)
7. Paging Input (audio from a paging encoder)
8. Operator PTT (active low from an operator's PTT switch)
9. Supervisor's PTT (active low from a supervisor's PTT switch)
10. Supervisor Take-Over (active low from supervisor's override)
11. PA Enable (active high or low input to enable the building PA system)
12. 911 Active (active high or low corresponding to an on-line condition of the 911 console)
13. Paging Enable (active high or low corresponding to activation of a paging transmitter)
14. Select Audio (from the console select audio speaker)
15. Intercom (audio input)

### 5.4.6 OUTPUTS

All audio outputs from the 911 Interface module are balanced outputs, and have plug-in jumper selectable impedances of 130, 620 or 910 ohms. All outputs have separate gain adjustments through trim potentiometers with drive capability of 5V RMS into an open circuit. The 911 audio output is transformer coupled for added hum protection. The PTT is an active low, open collector output.

The 911 Interface module provides the following outputs:

1. Console Microphone (audio to the TRACER console microphone input)

2. 911 Audio (audio to the 911 console microphone input)
3. PA Output (audio to the building PA system microphone input)
4. Operator Earphone (audio output)
5. Supervisor Earphone (audio output)
6. PTT Out (active low, open collector to the console PTT)
7. Auxiliary (audio output)
8. 911 Recorder (recorder for all 911 activity)
9. Select audio (audio to the select audio speaker)

#### 5.4.7 MECHANICAL ASSEMBLIES

The 911 Interface module consists of two mechanical assemblies. The main assembly is a printed circuit board that attaches to the sheet metal panel and has a snap on dust cover. This assembly replaces the DCC in the console. This assembly contains all of the electronics for the 911 Interface module. It is interfaced into the console much the same as the DCC.

The second connector assembly is constructed in an extruded shell, and is mounted beneath the console writing surface. This box contains the connectors for the operator's and supervisor's headsets, along with the volume control for the 911 earpiece audio. Headset connections are made through 1/4" phone jacks. Connections from this module to the main 911 Interface module is through ribbon cables with connectors.

#### 5.4.8 THEORY OF OPERATION

Refer to Figure 5-1 for details of the operation of the 911 Interface module.

The 911 Interface module has three microphone inputs, one each for; the Console Operator, Desk microphone, and the Supervisor. At any time only one microphone is live. Normally the operator's microphone is active, however, the supervisor's microphone becomes active when the Supervisor PTT is pressed. There is also a supervisor takeover input that activates

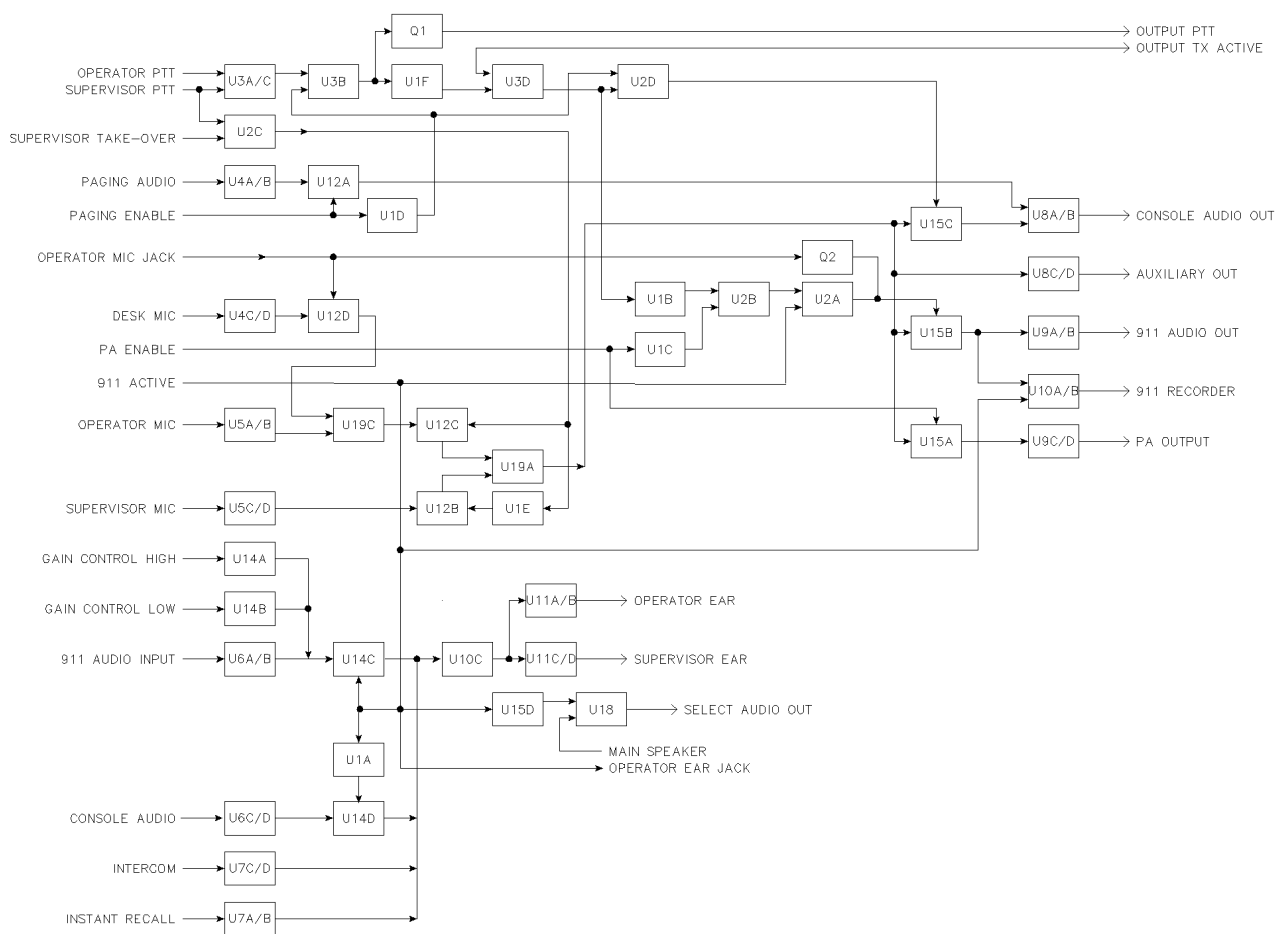
the supervisor's microphone as long as the supervisor's takeover input is active. The desk microphone is inoperative until the operator's microphone jack is removed, at which time, the desk microphone is enabled and functions as the operator's microphone. When the desk microphone is active, audio to the 911 console is muted.

Microphone audio is routed to four outputs. The console microphone output is active any time that either the operator or the Supervisor PTT is active, or when the Paging Enable is activated. When the Paging Enable is active, both microphones are muted, and the paging encoder is routed to the console microphone output. The 911 audio output is active when the 911 Active line is activated, and neither PTT, PA Enable, or Paging Enable is active. The PTT and Intercom may be programmed individually by plug-in jumpers to be disregarded for the 911 Audio output control. The exception is when the desk microphone option is used, this mutes the 911 audio out and the 911 recorder output. The PA output is active when the PA Enable is active. The Auxiliary output is always live for the selected microphone.

The 911 Interface module has two earpiece audio outputs. Both outputs are active at all times. The outputs are a summation of the 911 Audio, Console Select Audio, Intercom Audio, and the output of an Instant Recall Recorder. The 911 audio is gated with the 911 Active status. The 911 audio has an independent volume control consisting of four levels. This volume is controlled by a 4-position rotary switch located in the small connector box located under the console writing surface. The 911 Recorder output provides for recording both the 911 microphone and earpiece audio.

The Select Speaker audio is routed to the 911 Interface module. Select audio is jumper programmed for either always on, always off, or becomes active when the 911 Active line is enabled. This allows for console audio to be switched from the headset to the select speaker during 911 calls. In addition, by jumper programming, the Select Speaker audio can be enabled whenever the operator's earpiece is unplugged and the desk microphone is also used.

A PTT output is provided to the console PTT input, which is an "OR" connection of the Operator PTT, the Supervisor PTT, and the Paging Enable.



**Figure 5-1 911 INTERFACE BLOCK DIAGRAM**

**Table 5-1 JUMPER PROGRAMMING FOR INPUT BLOCKS**

| Bias Voltage<br>Impedance                                                                                                                                              | 2.5V<br>300 | 12V<br>620            | 2.5V<br>3.9k | 0V<br>120             | 0V<br>620             | 0V<br>910 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|--------------|-----------------------|-----------------------|-----------|
| Paging Audio $\pm$ (J24, 1-2 <sup>1</sup> )                                                                                                                            | J21, 1-2    | J22, 1-2              | J23, 1-2     | J21, 2-3              | J22, 2-3 <sup>1</sup> | J23, 2-3  |
| Desk Mic $\pm$ (J83, 1-2 <sup>1</sup> ) <sup>2</sup>                                                                                                                   | J80, 1-2    | J81, 1-2 <sup>2</sup> | J82, 1-2     | J80, 2-3 <sup>3</sup> | J81, 2-3              | J82, 2-3  |
| Operator Mic $\pm$ (J29, 1-2 <sup>1</sup> )                                                                                                                            | J26, 1-2    | J27, 1-2 <sup>1</sup> | J28, 1-2     | J26, 2-3              | J27, 2-3              | J28, 2-3  |
| Supervisor Mic $\pm$ (J34, 1-2 <sup>1</sup> )                                                                                                                          | J31, 1-2    | J32, 1-2 <sup>1</sup> | J33, 1-2     | J31, 2-3              | J32, 2-3              | J33, 2-3  |
| 911 Audio Input $\pm$                                                                                                                                                  |             |                       |              | J20, 1-2              | J20, 3-4 <sup>1</sup> | J20, 5-6  |
| Console Audio $\pm$ (J39, 1-2 <sup>1</sup> )                                                                                                                           | J36, 1-2    | J37, 1-2              | J38, 1-2     | J36, 2-3              | J37, 2-3 <sup>1</sup> | J38, 2-3  |
| Intercom $\pm$ (J44, 1-2 <sup>1</sup> )                                                                                                                                | J41, 1-2    | J42, 1-2 <sup>1</sup> | J43, 1-2     | J41, 2-3              | J42, 2-3              | J43, 2-3  |
| Instant Recall $\pm$ (J49, 1-2 <sup>1</sup> )                                                                                                                          | J46, 1-2    | J47, 1-2 <sup>1</sup> | J48, 1-2     | J46, 2-3              | J47, 2-3              | J48, 2-3  |
| <sup>1</sup> These jumpers ground the negative terminal of the corresponding input.<br><sup>2</sup> Challenger desk microphone.<br><sup>3</sup> Shure boom microphone. |             |                       |              |                       |                       |           |

**Table 5-2 JUMPER PROGRAMMING FOR OUTPUT BLOCKS**

| Impedance                            | 68       | 300*     | 430      |
|--------------------------------------|----------|----------|----------|
| Console Mic+                         | J51, 1-2 | J51, 3-4 | J51, 5-6 |
| Console Mic-                         | J52, 5-6 | J52, 3-4 | J52, 1-2 |
| Auxiliary +                          | J61, 1-2 | J61, 3-4 | J61, 5-6 |
| Auxiliary -                          | J62, 5-6 | J62, 3-4 | J62, 1-2 |
| 911 Audio Out +                      | J63, 1-2 | J63, 3-4 | J63, 5-6 |
| 911 Audio Out -                      | J64, 5-6 | J64, 3-4 | J64, 1-2 |
| PA Output +                          | J65, 1-2 | J65, 3-4 | J65, 5-6 |
| PA Output -                          | J66, 5-6 | J66, 3-4 | J66, 1-2 |
| 911 Recorder +                       | J56, 1-2 | J56, 3-4 | J56, 5-6 |
| 911 Recorder -                       | J57, 5-6 | J57, 3-4 | J57, 1-2 |
| Operator Ear +                       | J67, 1-2 | J67, 3-4 | J67, 5-6 |
| Operator Ear -                       | J68, 5-6 | J68, 3-4 | J68, 1-2 |
| Supervisor Ear +                     | J69, 1-2 | J69, 3-4 | J69, 5-6 |
| Supervisor Ear -                     | J70, 5-6 | J70, 3-4 | J70, 1-2 |
| * Standard configuration of jumpers. |          |          |          |

**Table 5-3 JUMPER PROGRAMMING FOR LOGIC BLOCKS**

|                                                                             |                                               |                      |                  |  |
|-----------------------------------------------------------------------------|-----------------------------------------------|----------------------|------------------|--|
|                                                                             | Low to activate [1]                           | High to activate [1] | Disabled         |  |
| Paging Enable on J9, pin 21                                                 | J13, pins 2-3*                                | J13, pins 1-2        | J13, pin 1 only  |  |
| PA Enable on J9, pin 22                                                     | J14, pins 2-3(A)                              | J14, pins 1-2(A)     | J14, pin 1 only* |  |
| 911 Active on J9, pin 23                                                    | J15, pins 2-3(B)*                             | J15, pins 1-2(B)     | J15, pin 1 only  |  |
| [1] This is the output state of the console when a logic block is selected. |                                               |                      |                  |  |
| Jumper                                                                      | Output Result                                 |                      | Affects          |  |
| J16, 1-2                                                                    | Logic High (+5V)                              |                      | 911 Audio Output |  |
| J16, 2-3*                                                                   | Logic Variable (PTT Out and Output Tx Active) |                      |                  |  |

**Table 5-3 JUMPER PROGRAMMING FOR LOGIC BLOCKS**

|                                                                                                                               | Low to activate [1]                              | High to activate [1] | Disabled                     |  |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------|------------------------------|--|
| J17, 1-2*                                                                                                                     | Logic High (+5V)                                 |                      | 911 Audio Output             |  |
| J17, 2-3                                                                                                                      | Logic Variable (J14, pin 2 and PA Enable)(A)     |                      |                              |  |
| J18, 1-2*                                                                                                                     | Logic Variable (J15, pin 2 and 911 Active)(B)    |                      | J19, pin 1 and Console Audio |  |
| J18, 2-3                                                                                                                      | Logic Low (Ground)                               |                      |                              |  |
| J19, 1-2                                                                                                                      | Logic Variable (J18, pin 2)                      |                      | Select Audio                 |  |
| J19, 2-3*                                                                                                                     | Logic Variable (High or J99, pin 2 Op Mic Sense) |                      |                              |  |
| J99, 1-2                                                                                                                      | Logic Variable (Op Mic Sense [Low or Open])      |                      | J19, pin 3                   |  |
| J99, 2 only*                                                                                                                  | Disabled                                         |                      |                              |  |
| Comments in parenthesis explain what would influence the logic to be High, Low, or Variable (includes pin numbers or inputs). |                                                  |                      |                              |  |
| * Standard configuration for jumpers.                                                                                         |                                                  |                      |                              |  |

## SECTION 6 911 INTERFACE MODULE INSTALLATION AND SETUP

### 6.1 CONSOLE HARDWARE CONFIGURATION

The Console consists of 13 different pieces of hardware (see Table 6-1). Figure 6-1 is a block diagram of how each piece of hardware fits together to create the Console and how the Console is interconnected.

**Table 6-1 CONSOLE HARDWARE**

| Hardware                          | Part Number  |
|-----------------------------------|--------------|
| Console Audio Panel               | 023-3039-260 |
| IDC Audio Interface Card          | 023-3039-280 |
| Encrypted Console IDC             | 023-3039-283 |
| Console Custom Keyboard           | 023-3039-285 |
| PCM Summation Board               | 023-3039-780 |
| 911 Interface Module              | 023-3039-900 |
| Includes:                         |              |
| 911 Jack Box                      | 023-3039-910 |
| Modular Jack Adapter Cable        | 023-7175-807 |
| Footswitch*                       | 583-4001-014 |
| 8 ft. AC Cord 3/18 black*         | 597-1001-002 |
| Console Computer**                | 583-3000-xxx |
| Trackball Mouse                   | 585-3000-127 |
| 5 ft F/F 9-pin RS-232 Cable       | 597-0005-035 |
| 5 ft M/M 25-pin RS-232 Cable      | 597-4003-001 |
| * Footswitch requires an AC cord. |              |
| ** Consult EF Johnson.            |              |

### 6.2 911 INTERFACE MODULE

The 911 Interface Module is the interconnecting point for all the console's external devices (see Figure 6-1, Tables 6-2 and 6-3).

**Table 6-2 INTERFACE CONNECTIONS**

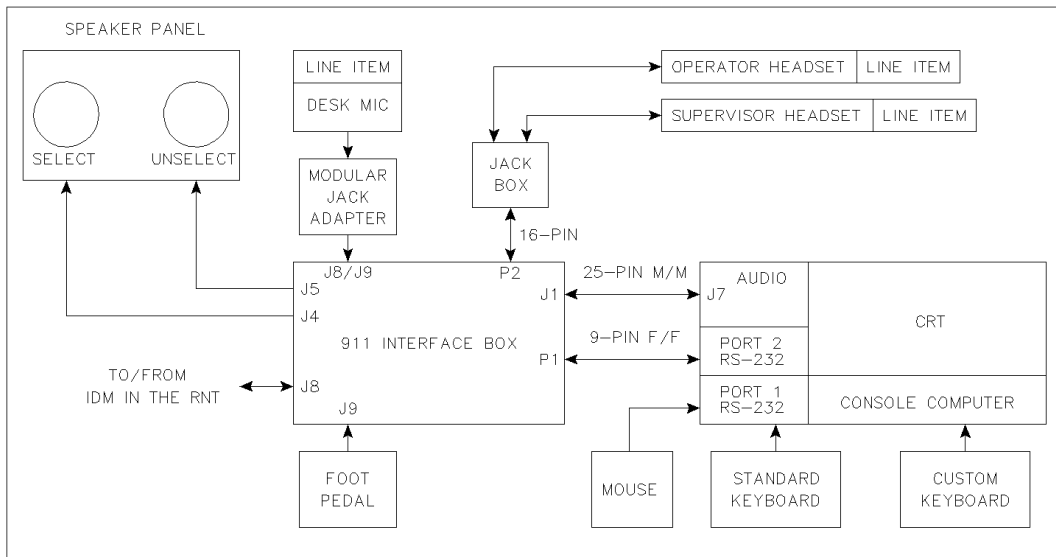
| Device                          | Section    |
|---------------------------------|------------|
| 911 Jack Box                    | 6.3        |
| Console Audio Panel             | 6.4        |
| IDC Audio Interface Card        | 6.5        |
| PCM Summation Card              | 6.6        |
| I/O Alarm Relay Card            | 6.7        |
| IDM Intelligent Dispatch Module | 6.8        |
| 5 ft F/F 9-pin RS-232 Cable     | Figure 6.1 |
| 5 ft M/M 25-pin RS-232 Cable    | Figure 6.5 |

**Table 6-3 LINE ITEMS/ACCESSORIES**

|                                           | Part Number  |
|-------------------------------------------|--------------|
| Desk Microphone                           | 250-0742-010 |
| I/O Alarm Relay Card***                   | 585-3000-134 |
| Profile III Headset**                     | 589-2006-023 |
| GN Netcom Monaural<br>and 1/4" phone jack | 589-9006-024 |
| Plantronics Monaural*                     | 589-9006-030 |
| Plantronics Binaural*                     | 589-9006-031 |
| Plantronics Mirage (earhook)*             | 589-9006-032 |
| * Includes plug prong adapter.            |              |
| ** Before 7/18/94.                        |              |
| *** See Section 6.7                       |              |

### 6.3 911 JACK BOX

The Jack Box provides 1/4" phone jacks for both the operator's and supervisor's headsets and has a level control for 911 earpiece audio. The operator's microphone jack also enables/disables the desk microphone operation. The 911 Jack Box comes with an interface cable that plugs directly into P2 of the 911 board.



**Figure 6-1 CONSOLE BLOCK DIAGRAM WITH 911 INTERFACE**

## 6.4 CONSOLE AUDIO PANEL

The Console Audio Panel contains the select and unselect speaker. Each speaker has an associated mute switch. The audio is muted by switching to a 3.3 ohm load and muting is indicated by a light within the switch being turned on. The console audio panel includes two speaker coaxial cables that plug directly into jacks J4 and J5 of the 911 board.

## 6.5 IDC AUDIO INTERFACE CARD

The IDC Audio Interface Card logic board controls the audio to and from the console. A 5 foot male/male 25-pin RS-232 cable is used to connect J7 of the IDC card to J1 of the 911 board.

*NOTE: Console IDC board, Revision 4.0 or older needs the following modifications made to supply +12V to the 911 Interface Module.*

1. Remove U27.
2. Jumper U14, pin 5 to J7, pin 12.
3. Jumper J7, pin 11 to J7, pin 12.
4. Jumper J7, pin 13 and J7, pin 14 to ground.

The jumpers and switches on the Audio Interface Card must be setup and selected before installation and alignment.

### 6.5.1 JUMPER DESCRIPTION

- J2 Connects microphone - input to ground, to +12V or open.
- J3 Connects Select Audio for 600 ohm input.
- J4 Connects Unselect Audio - input to ground.
- J5 Connects Unselect Audio for 600 ohm input.
- J8 Connects 10k pull-up resistor to +5V for non-used input.
- J10 Connects microphone + input to +2.5V via 300 ohms.
- J11 Connects microphone + input to +12V via 1240 ohms.
- J12 Connects microphone + input to +2.5V via 6100 ohms.



- J13 Provides high Z (10k) audio path for headset + output.
- J14 Provides low Z (300) audio path for headset + output.
- J15 Provides non DC blocked audio path for headset + output (+2.5V).
- J16 Provides ground for headset - output.
- J17 Connects Select Audio - input to ground.
- J18 Connects microphone input for 600 ohm input.
- J28 Connects microphone audio to recorder summation output.
- J29 Connects Unselect Audio to recorder summation output.
- J30 Connects Select Audio to recorder summation output.
- J31 Connects Headset Receive Audio to recorder summation output.

## 6.5.2 JUMPER USAGE

*NOTE: \* indicates the standard configuration "on", other jumper "off".*

### Unselect Audio Input

- J5\* On Provides 600 ohm input.
- J4 Off Provides balanced input.

### Select Audio Input

- J3\* On Provides 600 ohm input.
- J17 Off Provides balanced input.

### Headset Earpiece (headset 589-9006-024)

- J13 Off No high impedance.
- J14\* On Provides low impedance 300 ohm output.
- J15\* On Provides for +2.5V DC output.
- J16\* On Provides for DC ground return.

### Recorder Summation Output Selection

(On = Summed Output)

- J28\* Microphone audio output.
- J29 Unselect speaker output.
- J30 Select speaker output.
- J31\* Headset earpiece output.

### Microphone Input

#### Headset Microphone

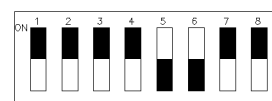
- J10 Off
- J11 Off
- J12 On Provides +2.5V via 600 ohms.
- J18\* Off Provides high impedance input.
- J2 Pins 2 and 3. Provides DC ground return.

#### Deskset Microphone

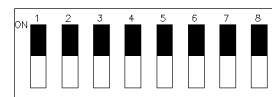
- J10 Off
- J11 On Provides +12V via 1240 ohms.
- J12 Off
- J18 Off Provides high impedance input.
- J2 Pins 1 and 2. Provides +12V to desk mic. Ground path provided by PTT DC return.

## 6.5.3 SWITCH SETTINGS

S1 and S2 provide the address for the audio card, for example address 0C00h. FACTORY SET DO NOT TOUCH.



**Figure 6-2 AUDIO CARD S1**



**Figure 6-3 AUDIO CARD S2**

## 6.6 PCM SUMMATION CARD

The PCM Summation Card sums the audio for the unselect audio (see Figure 6-11).

1. The PCM summation board is installed on the IDM board at the factory.
2. Insert the IDM into the slot connected to the DCC.
3. On the IDM select Test "9" by setting S5 to a "9" (See Figure 6-8).
4. On a CIM select test "9" by setting S5 to a "9".
5. Connect a transmission test set to TP1 and adjust R1 for +2.5 dBm.
6. Connect a transmission test set to TP2 and adjust R25 for -3 dBm.
7. Reset S5 on the CIM/IDM (close all sections).

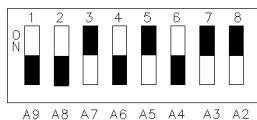
## 6.7 I/O ALARM RELAY CARD

The I/O Alarm Relay Card contains 8 input contacts and 8 output contacts. The 8 inputs can be connected for either active high or active low. The 8 output contacts are dry contacts.

The Alarm Relay Module (ARM) activates relays when alarm trigger events occur in the System Management Module (SMM). The ARM provides 8 relay outputs (5 SPDT and 3 SPST). The relays have a 2 amp rating.

### 6.7.1 SETUP

The ARM is an I/O card that is inserted in an expansion slot of the System Management Module computer. The ARM must be set for a specific address by setting S1 for 350 (hex), see Figure 6-4.



**Figure 6-4 S1 350 HEX**

## 6.7.2 ALARMS

The SMM monitors for alarm activity in the system and can set the various output relays as defined by the user. When an external alarm relay is set, a time-stamp record is recorded in the device activity log. The alarms are cleared by the SMM operator in a simple selection by alarm number. Refer to System Management Module Operator's Manual, Part No. 002-3039-075.

## 6.7.3 OUTPUTS

The alarm relay outputs are provided via a DB-37 pin connector. Refer to Table 6-4.

**Table 6-4 ALARM RELAY OUTPUTS**

| Alarm  | NC Pin | Common | NO Pin |
|--------|--------|--------|--------|
| 1. OP0 | 18     | 37     | 19     |
| 2. OP1 | 35     | 17     | 36     |
| 3. OP2 | 15     | 34     | 16     |
| 4. OP3 | 32     | 14     | 33     |
| 5. OP4 | 12     | 31     | 13     |
| 6. OP5 | --     | 11     | 30     |
| 7. OP6 | --     | 10     | 29     |
| 8. OP7 | --     | 9      | 28     |

## 6.7.4 RELAY INPUTS

The isolated inputs are driven by either AC or DC signals and are not polarity sensitive. Input signals are rectified by a diode bridge and connected across the LED of an opto-isolator. A 470 ohm resistor in series dissipates unused power. Standard 12/24V AC control transformer outputs can be accepted as well as DC voltages. The input voltage range is 5-24V RMS. External resistors connected in series may be used to extend the input voltage range. Refer to Figure 6-5 and Table 6-5.

Each input circuit contains a switchable slow/fast filter with a 10 ms time constant (without filtering, the response is 20  $\mu$ s). The filter must be selected for AC inputs in order to eliminate response to zero crossings. The filter is also valuable for use with slow DC input signals in a noisy environment. The filter may be switched out for DC inputs in order to obtain faster response. Filters are individually selected by switch S3: IP0 is controlled by S3-1, IP1 by S3-2, IP2 by S3-3, etc.

### 6.7.5 RELAY OUTPUTS

The electromechanical relay outputs are comprised of five FORM C SPDT outputs and three FORM A SPST (normally open) type. The relays

are all de-energized at power-on. Data to the relays is latched by a write to the base address. On/off status of the relays can be read back by a read at the base address.

### 6.7.6 CONNECTOR PIN ASSIGNMENTS

**Table 6-5 CONNECTOR PINOUTS**

| Pin | Name    | Function                |
|-----|---------|-------------------------|
| 1   | IP7     | Digital Input Bit 7     |
| 2   | IP6     | Digital Input Bit 6     |
| 3   | IP5     | Digital Input Bit 5     |
| 4   | IP4     | Digital Input Bit 4     |
| 5   | IP3     | Digital Input Bit 3     |
| 6   | IP2     | Digital Input Bit 2     |
| 7   | IP1     | Digital Input Bit 1     |
| 8   | IP0     | Digital Input Bit 0     |
| 9   | OP7(C)  | Bit 7 Relay Common      |
| 10  | OP6(C)  | Bit 6 Relay Common      |
| 11  | OP5(C)  | Bit 5 Relay Common      |
| 12  | OP4(NC) | Bit 4 Relay, NC Contact |
| 13  | OP4(NO) | Bit 4 Relay, NO Contact |
| 14  | OP3(C)  | Bit 3 Relay Common      |
| 15  | OP2(NC) | Bit 2 Relay, NC Contact |
| 16  | OP2(NO) | Bit 2 Relay, NO Contact |
| 17  | OP1(C)  | Bit 1 Relay Common      |
| 18  | OP0(NC) | Bit 0 Relay, NC Contact |
| 19  | OP0(NO) | Bit 0 Relay, NO Contact |
| 20  | IP7     | Digital Input Bit 7     |
| 21  | IP6     | Digital Input Bit 6     |
| 22  | IP5     | Digital Input Bit 5     |
| 23  | IP4     | Digital Input Bit 4     |
| 24  | IP3     | Digital Input Bit 3     |
| 25  | IP2     | Digital Input Bit 2     |
| 26  | IP1     | Digital Input Bit 1     |
| 27  | IP0     | Digital Input Bit 0     |
| 28  | OP7(NO) | Bit 7 Relay, NO Contact |
| 29  | OP6(NO) | Bit 6 Relay, NO Contact |
| 30  | OP5(NO) | Bit 5 Relay, NO Contact |
| 31  | OP4(C)  | Bit 4 Relay Common      |
| 32  | OP3(NC) | Bit 3 Relay, NC Contact |
| 33  | OP3(NO) | Bit 3 Relay, NO Contact |
| 34  | OP2(C)  | Bit 2 Relay Common      |
| 35  | OP1(NC) | Bit 1 Relay, NC Contact |
| 36  | OP1(NO) | Bit 1 Relay, NO Contact |
| 37  | OP0(C)  | Bit 0 Relay Common      |

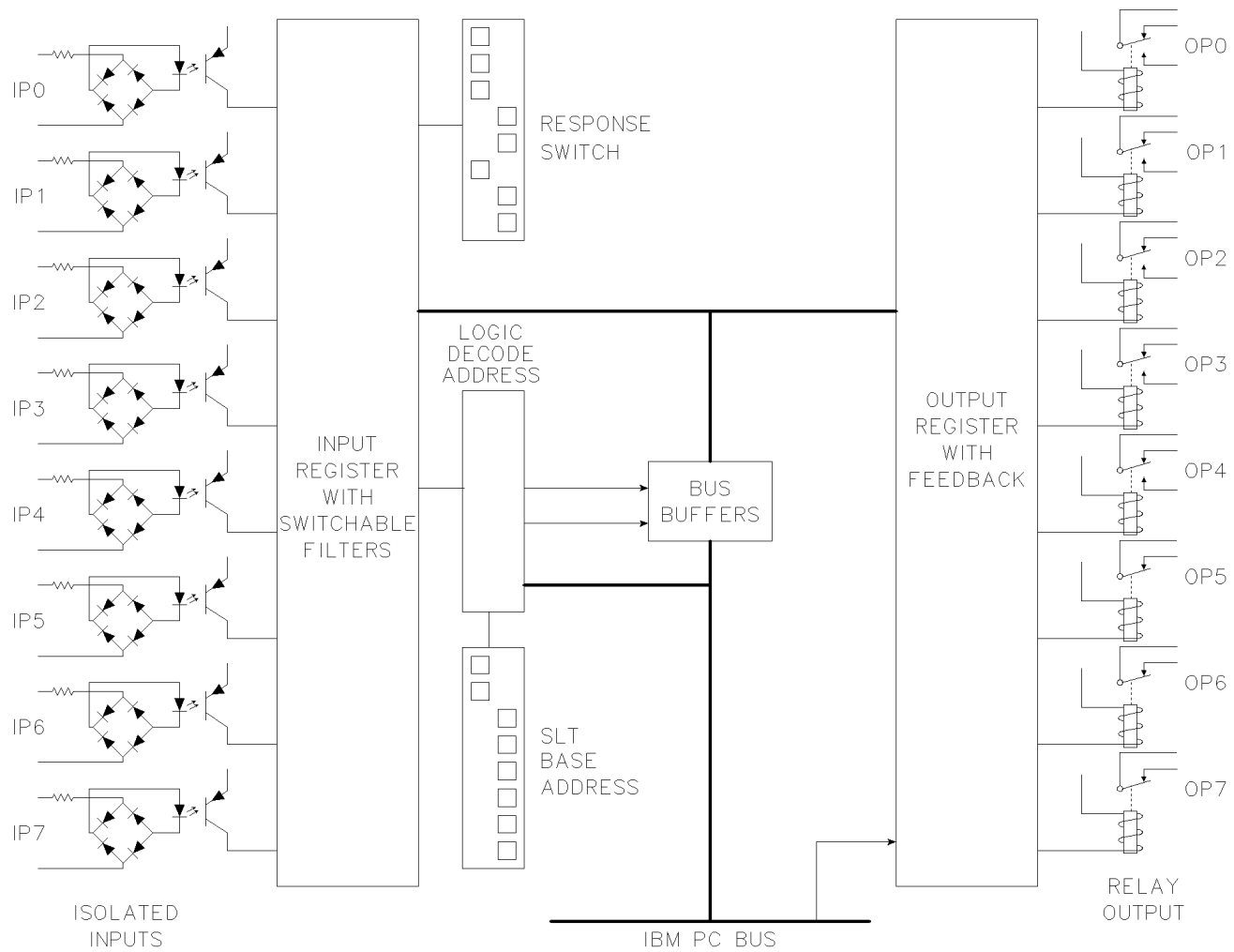


Figure 6-5 RELAY BLOCK DIAGRAM

## 6.8 IDM PRE-ALIGNMENT

The Intelligent Dispatch Module (IDM) to which the dispatch console is attached must be aligned using the procedure in the RNT Manual, Part No. 001-3039-008, and have an aligned PCM Summation board (secondary audio board) attached to it.

There must be at least one pre-aligned Channel Interface Module (CIM) card in the switch to align the IDC card. Refer to Figure 6-10 for IDC audio alignment points. Refer to the Multi-Net RNT Service Manual, Part No. 001-3039-100 for information on the CIM and IDM modules.

### 6.8.1 RECEIVE AUDIO ALIGNMENT

Install the IDC audio board into a working Dispatch Computer Console (DCC) connected to an Intelligent Dispatch Module (IDM).

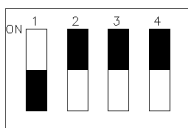
Adjust all the audio sources to a minimum (level of "2" - 1 bar) on the console monitor (Headset, Selected and Unselected) see Figure 6-6.



**Figure 6-6 DCC CONSOLE AUDIO**

#### Select Audio Adjust

1. On the IDM select Test "1", set S5 to a "1".



**Figure 6-7 S5 TEST 1 SETTING**

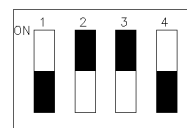
2. On the DCC monitor, verify the select audio volume control (S) is at minimum audio level ("2" - 1 bar) see Figure 6-6.
3. On the IDC board, connect a transmission test set to EP4 and adjust R5 to -12 dBm.
4. On the IDC board, measure the level at EP6 and adjust R4 to -40 dBm.

#### Headset Audio Adjust

1. On the DCC monitor, verify the headset volume control (H) is at minimum audio level ("2" - 1 bar) see Figure 6-6.
2. On the IDC board, connect a transmission test set to EP5 and adjust R3 for -30 dBm.

#### Unselect Audio Adjust

1. On the IDM select test "9" by setting S5 to a "9" (the IDM must have a pre-aligned PCM Summation board connected to it). See Section 6.6.



**Figure 6-8 S5 TEST 9**

2. On a CIM select test "9" by setting S5 to a "9".
3. On the DCC monitor verify, the unselect audio volume control (U) is at minimum audio level ("2" - 1 bar) see Figure 6-6.
4. On the IDC board, connect a transmission test set to EP7 and adjust R6 for -12 dBm.
5. On the IDC board, connect a Transmission test set to EP8 and adjust R7 for -40 dBm.

### 6.8.2 TRANSMIT AUDIO ALIGNMENT

On the IDC board, inject 1 kHz tone at 0 dBm across J7, pins 1 and 2 (microphone input).

J7, pin 1 = Jumper 10, pin 2  
J7, pin 2 = Jumper 2, pin 2.

#### Microphone Input Audio Adjust

1. Connect a transmission test set to EP2.
2. Adjust R9 for -5 dBm.

### Microphone Audio Adjust

1. Connect a transmission test set to EP3.
2. Key the operator PTT.
3. Adjust R8 for -12 dBm.
4. Unkey the operator PTT.

### Recorder Level Adjust

1. Jumper J28, pin 1 to pin 2.
2. Connect a transmission test set to EP9.
3. Key the operator PTT.
4. Adjust R2 for -12 dBm.
5. Unkey the operator PTT.

Remove the 1 kHz injected signal from J7.  
(Remove the jumper of J28 if the optional recorder is not used.)

### DTMF Output Adjust

On the Console: Press TOG M; Press SETUP; and select setup window appears. Select DTMF level adjust and press Enter.

1. Connect transmission test set to EP1.
2. Adjust R1 for -12 dBm.

### DTMF Loopback Adjust

1. Connect a transmission test set to EP10.
2. Adjust R100 for -12 dBm.
3. Press any key to clear.
4. Press TOG M to return to normal screen.

## 6.9 911 INTERFACE ALIGNMENT

### 6.9.1 911 TUNING PROCEDURE/GUIDELINES

This tuning procedure covers all audio inputs, audio outputs, and the 15 potentiometers that are located on the 911 Interface PC board.

The following tuning procedures and the jumper programming shown in Figure 6-12 are for testing audio inputs and outputs and may have to be adjusted and reprogrammed according to individual needs.

Preset the 911 Jack Box Level Adjust. Switch to maximum (fully clockwise). This controls the 911 audio only.

Preset the Headset Volume Control (if equipped) to a minimum, midrange comfortable setting.

Preset the Console Audio Levels. Verify that the: Set Headset, Select and Unselect Volume Controls are at minimum (level of "2" - 1 Bar).

*NOTE: Console audio Levels adjust Digital 100k ohm pots, which control the gain of OP amps. The levels set will affect adjustments and levels of both the IDC card and the 911 Interface Module. This procedure uses the minimum level of "2" for alignment purposes.*

After alignment the console operators can tailor the Console Audio levels to individual needs (Console Audio panel has a mute feature).

The console operator can also pad down (coarse adjust) the output of the 911 amplifier to the operator/supervisor earphone and 911 output/recorder input by rotating the Jack Box level control counterclockwise.

The Headset Level can be adjusted (fine) by the Volume Control of the headset (if equipped).

### 6.9.2 HEADSET MICROPHONE INPUT/ CONSOLE MICROPHONE OUTPUT

(Unplugging the operator's headset will load the circuit)  
**On the 911 Interface Board:**

1. Inject a 1 kHz tone into P2, pins 1 and 2.  
(A DC blocking capacitor is required.)

Audio Level:

GN Profile III (-024) -10 dBm

Plantronics Series (-030/-032) -5 dBm

2. Adjust R2 for -5 dBm at TP2 (U19, pin 1).
3. Key the Operator's PTT (J9, pin 20 to gnd) to gate audio to the console microphone output (U15, pin 6 high).
4. Remove jumpers to access J51, pin 4 and J52, pin 4.
5. Adjust R9 for 0 dBm a J51, pin 4 and J52, pin 4.
6. Replace jumpers on J51, pin 4 and J52, pin 4.

#### On the IDC Board:

7. Adjust R9 for -5 dBm at EP2.
8. Adjust R8 for -12 dBm at EP3.
9. Unkey the Operator's PTT on the 911 Board.

#### 6.9.3 DESK MICROPHONE ADJUSTMENTS

*NOTE: The Desk microphone is disabled when P2, pin 14 is Low. Remove the headset jack to enable the desk microphone option.*

1. On the 911 Interface Board, inject a 1 kHz tone into J9, pins 25 and 26.  
(A DC blocking capacitor is required if 12V bias is supplied to the desk microphone.)

Audio Level:

Challenger Desk Microphone -15 dBm

Shure Boom Microphone -30 dBm

2. Adjust R8 at TP2 (U19, pin 1) for:  
-5 dBm desk microphone  
+10 dBm boom microphone
3. Replace Headset Jack into 911 Jack Box.

#### 6.9.4 SUPERVISOR MICROPHONE ADJUSTMENTS

(Unplugging the supervisor's headset will load the circuit)

1. On the 911 Interface Board, key the Supervisory PTT (J9, pin 18 or 19 to gnd) to gate audio to TP2 (U12, pin 5 High).
2. Inject a 1 kHz tone into P2, pins 3 and 4.  
(A DC blocking capacitor is required.)

Audio Level:

GN Profile III (-024) -10 dBm

Plantronics Series (-030/-032) -5 dBm

3. Adjust R3 for -5 dBm at TP2 (U19, pin 1).

*NOTE: Console Microphone Output Level adjust R9 was previously adjusted with Headset Microphone.*

4. Verify 0 dBm at the Console Output if desired  
(adjust R3 if required).
5. Unkey the Supervisory PTT on the 911 Board.

#### 6.9.5 PAGING AUDIO

6. On the 911 Interface Board, inject a -15 dBm, 1 kHz tone into J9, pins 1 and 2.
7. Adjust R1 for -5 dBm at TP1 (U4, pin 7).

*NOTE: Console Microphone Output Level adjust R9 was previously adjusted with Headset Microphone.*

1. Verify -5 dBm at the Console Output (adjust R1 if required).
2. Key Paging Enable (J9, pin 21 to ground) to gate audio to the console microphone output (U12, pin 13 is High).
3. Unkey Paging Enable.

#### 6.9.6 HEADSETS RECEIVE AND CONSOLE AUDIO

1. Set IDM to a Test 1 (S5 section 1 open, close 2, 3 and 4).

## On the Console:

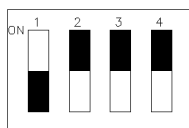
1. verify/adjust the Headset Audio for a level of "2" (1 bar).

## On the IDC: (see Figure 6-10)

1. Adjust R5 for -12 dBm at EP4.
2. Adjust R3 for -30 dBm at EP5.

## On the 911 Interface: (see Figure 6-12)

1. Adjust R5 for -30 dBm at TP3 (U10, pin 8).
2. Remove jumpers to access J67, pin 4 and J68, pin 4.
3. Adjust R14 for -25 dBm at J67, pin 4 and J68, pin 4 (Operator Ear).
4. Replace jumpers on J67, pin 4 and J68, pin 4.
5. Remove jumpers to access J69, pin 4 and J70, pin 4.
6. Adjust R15 for -25 dBm at J69, pin 4 and J70, pin 4 (Supervisor Ear).
7. Replace jumpers on J69, pin 4 and J70, pin 4.
8. Reset the IDM to normal operation (S5 all sections On).



**Figure 6-9 IDM S5 TEST 1**

## 6.9.7 911 RECEIVE AUDIO

911 Audio Input is connected directly to the phone line. The Central Office (CO) is capable of sending a Test Signal to the customers leased phone

lines. The signal level at a customer's site can be a minimum of -17 dB, is typically -7 dB and the maximum is 0 dB. (This is typical only in domestic systems.)

If the 911 Board is functioning correctly, there should not be any insertion loss through the board. The board should be able to compensate for a low signal level. However, if the Telco audio is suspected to be below the minimum (-17 dB), the Telco should be called and asked to check the level present at the site and correct it.

1. On the 911 board inject a -17 dBm, 1 kHz tone into J9, pins 3 and 4.
2. Activate the 911 Active line (J9, pin 23 to ground) to gate 911 audio to TP3 (audio is also routed to the operator's ear, supervisor's ear and 911 recorder).
3. Adjust R4 for -7 dBm at TP3 (U10, pin 8).

## 6.9.8 911 TRANSMIT AUDIO AND 911 RECORDER

*NOTE: Operator/Headset Microphone Jack must be plugged in (P2, pin 14 Low) to gate audio to 911 Audio Output/911 Recorder (U15, pin 5 high). This also disables the Desk Microphone operation.*

1. On the 911 board inject a 1 kHz tone into P2, pins 1 and 2.

(A DC blocking capacitor is required.)

Audio Level:

GN Profile III (-024) -10 dBm

Plantronics Series (-030/-032) -5 dBm

*NOTE: R2 was previously set.*

2. Activate the 911 Active Line (J9, pin 23 to ground) to gate the Operator Microphone to the 911 Audio Out/911 Recorder).
3. Adjust R12 for 0 dBm at J9, pins 11 and 12 (911 Audio Output).
4. Adjust R10 for -5 dBm at J9, pins 15 and 16 (911 Recorder).



### 6.9.9 OPTIONAL INPUT/OUTPUT ADJUSTMENTS

#### Intercom

1. On the 911 board inject a -15 dBm, 1 kHz tone into J9, pins 5 and 6.
2. Adjust R6 for unity gain at TP3 (U10, pin 8).

#### Instant Recall

1. On the 911 board inject a -15 dBm, 1 kHz tone into J9, pins 7 and 8.
2. Adjust R7 for unity gain at TP3 (U10, pin 8).

#### Auxiliary and PA Outputs

1. On the 911 board apply a ground to J9, pin 22 (PA Enable) to gate audio to PA Output (U15, pin 13 High) (also disables 911 Audio Output).
2. Inject a 1 kHz tone into P2, pins 1 and 2.  
(A DC blocking capacitor is required.)

#### Audio Level:

GN Profile III (-024) -10 dBm

Plantronics Series (-030/-032) -5 dBm

3. Adjust R11 for -5 dBm at J9, pins 9 and 10 (Auxiliary Output).
4. Adjust R13 for -5 dBm at J9, pins 13 and 14 (PA Output).

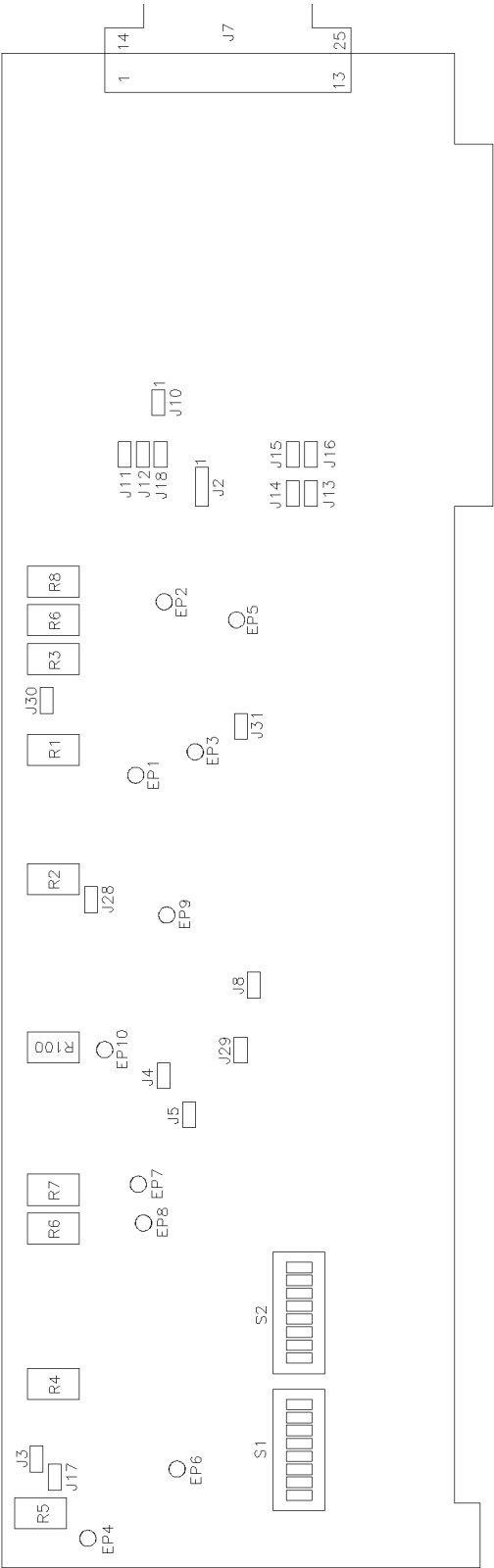


Figure 6-10 IDC ALIGNMENT POINTS

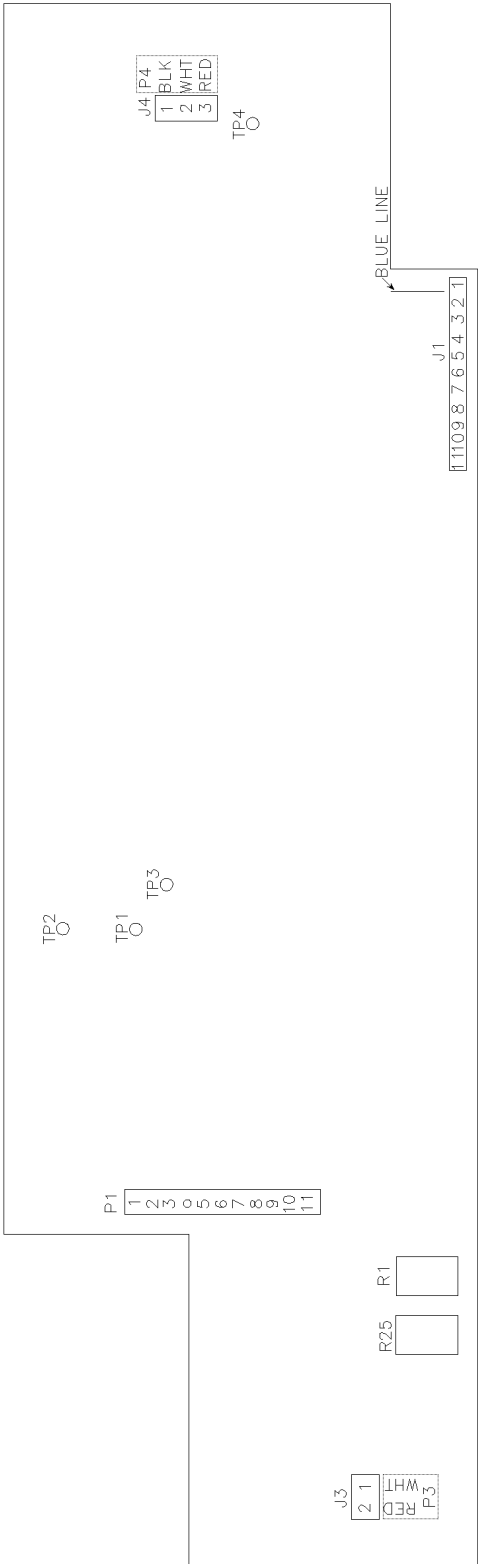


Figure 6-11 PCM SUMMATION ALIGNMENT POINTS

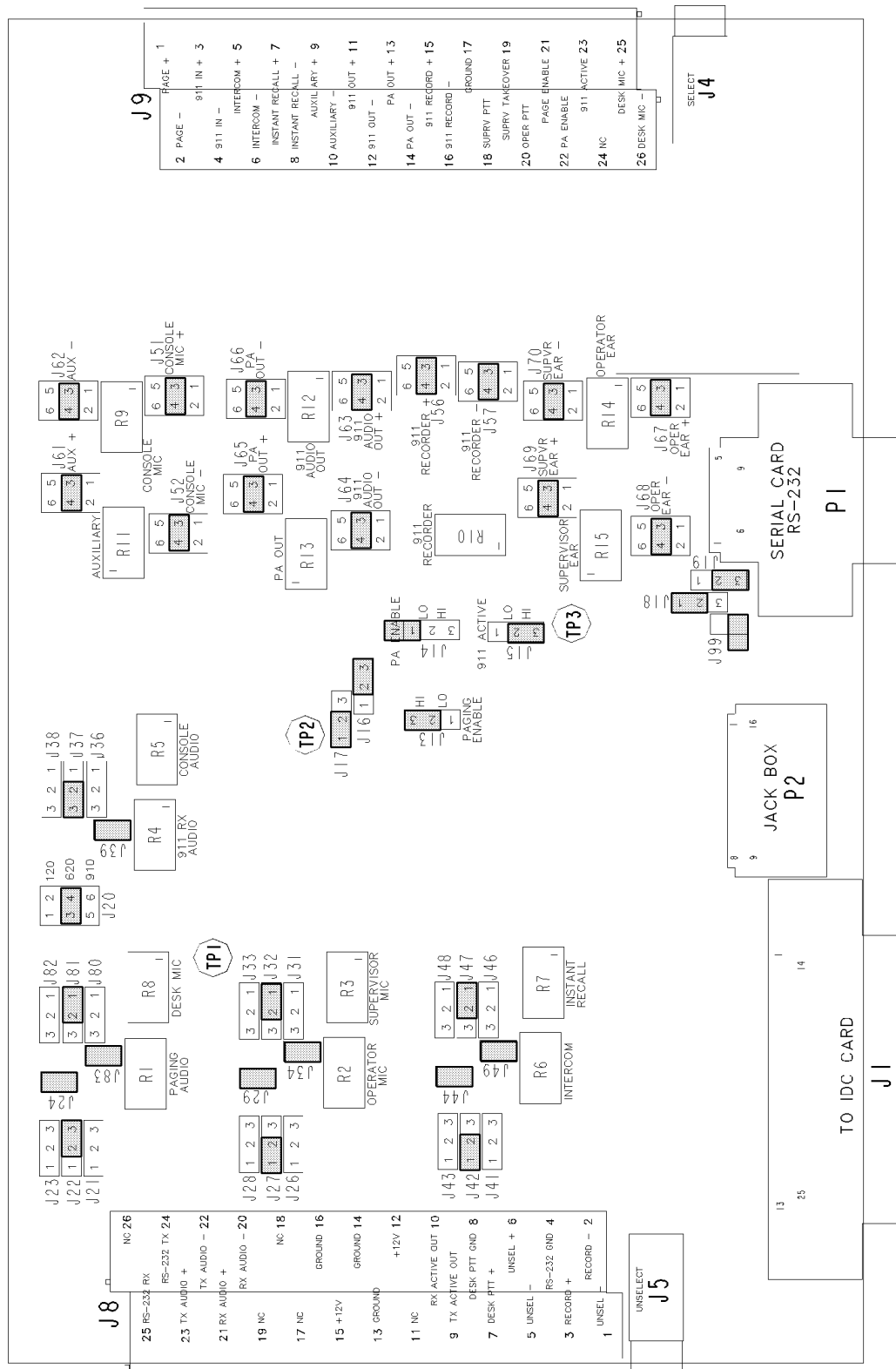


Figure 6-12 911 INTERFACE ALIGNMENT POINTS



## SECTION 7 PARTS LIST

| SYMBOL<br>NUMBER                                        | DESCRIPTION                      | PART<br>NUMBER | SYMBOL<br>NUMBER | DESCRIPTION                        | PART<br>NUMBER |
|---------------------------------------------------------|----------------------------------|----------------|------------------|------------------------------------|----------------|
| <b>IDC AUDIO CONTROL CARD<br/>PART NO. 023-3039-280</b> |                                  |                | C 042            | .1 $\mu$ F $\pm 10\%$ X7R 1210     | 510-3607-104   |
| C 001                                                   | .022 $\mu$ F $\pm 10\%$ X7R 1210 | 510-3607-223   | C 043            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 002                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 044            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 003                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 045            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 004                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 046            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 005                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 047            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 006                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 048            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 007                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 049            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 008                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 050            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 009                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 051            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 010                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 052            | 1000 $\mu$ F 16V aluminum axial    | 510-4316-102   |
| C 011                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 053            | 1000 $\mu$ F 16V aluminum axial    | 510-4316-102   |
| C 012                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 054            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 013                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 055            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 014                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 056            | 4.7 $\mu$ F 10V tantalum SMD       | 510-2624-479   |
| C 015                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 057            | 10 $\mu$ F 16V tantalum SMD        | 510-2625-100   |
| C 016                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 058            | 47 $\mu$ F 25V electrolytic radial | 510-4425-470   |
| C 017                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 059            | 47 $\mu$ F 10V tantalum SMD        | 510-2624-470   |
| C 018                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 060            | 47 $\mu$ F 25V electrolytic radial | 510-4425-470   |
| C 019                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 061            | 47 $\mu$ F 10V tantalum SMD        | 510-2624-470   |
| C 020                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 062            | 470 $\mu$ F 40V axial low temp     | 510-4340-471   |
| C 021                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 063            | 6.8 $\mu$ F 35V tantalum SMD       | 510-2628-689   |
| C 022                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 064            | 470 $\mu$ F 40V axial low temp     | 510-4340-471   |
| C 023                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 065            | 6.8 $\mu$ F 35V tantalum SMD       | 510-2628-689   |
| C 024                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 066            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 025                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 067            | 10 $\mu$ F 63V axial low temp      | 510-4363-100   |
| C 026                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 068            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 027                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 069            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 028                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 070            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 029                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 071            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 030                                                   | 1 $\mu$ F $\pm 20\%$ X7R 2225    | 510-3613-105   | C 072            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 031                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 073            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 032                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 074            | .1 $\mu$ F $\pm 10\%$ X7R 1210     | 510-3607-104   |
| C 033                                                   | .022 $\mu$ F $\pm 10\%$ X7R 1210 | 510-3607-223   | C 075            | 2.2 $\mu$ F 20V tantalum SMD       | 510-2626-229   |
| C 034                                                   | .047 $\mu$ F $\pm 10\%$ X7R 1210 | 510-3607-473   | C 076            | 47 $\mu$ F 10V tantalum SMD        | 510-2624-470   |
| C 035                                                   | .047 $\mu$ F $\pm 10\%$ X7R 1210 | 510-3607-473   | C 077            | 22 $\mu$ F 16V tantalum SMD        | 510-2625-220   |
| C 036                                                   | .047 $\mu$ F $\pm 10\%$ X7R 1210 | 510-3607-473   | C 078            | .1 $\mu$ F $\pm 10\%$ X7R 1210     | 510-3607-104   |
| C 037                                                   | .047 $\mu$ F $\pm 10\%$ X7R 1210 | 510-3607-473   | C 079            | 15 $\mu$ F 20V tantalum SMD        | 510-2626-150   |
| C 038                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 080            | 15 $\mu$ F 20V tantalum SMD        | 510-2626-150   |
| C 039                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 081            | 15 $\mu$ F 20V tantalum SMD        | 510-2626-150   |
| C 040                                                   | .01 $\mu$ F $\pm 10\%$ X7R chip  | 510-3606-103   | C 082            | 15 $\mu$ F 20V tantalum SMD        | 510-2626-150   |
| C 041                                                   | .1 $\mu$ F $\pm 10\%$ X7R 1210   | 510-3607-104   | C 083            | 15 $\mu$ F 20V tantalum SMD        | 510-2626-150   |
|                                                         |                                  |                | C 084            | 15 $\mu$ F 20V tantalum SMD        | 510-2626-150   |

# PARTS LIST

| SYMBOL<br>NUMBER | DESCRIPTION                 | PART<br>NUMBER | SYMBOL<br>NUMBER | DESCRIPTION                 | PART<br>NUMBER |
|------------------|-----------------------------|----------------|------------------|-----------------------------|----------------|
| CR001            | Dual switch, common cathode | 523-1504-022   | P 002            | Shorting socket             | 515-5010-001   |
| EP001            | Pin .025" sq x .655" long   | 515-7101-205   | P 003            | Shorting socket             | 515-5010-001   |
| EP002            | Pin .025" sq x .655" long   | 515-7101-205   | P 004            | Shorting socket             | 515-5010-001   |
| EP003            | Pin .025" sq x .655" long   | 515-7101-205   | P 005            | Shorting socket             | 515-5010-001   |
| EP004            | Pin .025" sq x .655" long   | 515-7101-205   | P 006            | Shorting socket             | 515-5010-001   |
| EP005            | Pin .025" sq x .655" long   | 515-7101-205   | P 007            | Shorting socket             | 515-5010-001   |
| EP006            | Pin .025" sq x .655" long   | 515-7101-205   | P 008            | Shorting socket             | 515-5010-001   |
| EP007            | Pin .025" sq x .655" long   | 515-7101-205   | P 009            | Shorting socket             | 515-5010-001   |
| EP008            | Pin .025" sq x .655" long   | 515-7101-205   | P 010            | Shorting socket             | 515-5010-001   |
| EP009            | Pin .025" sq x .655" long   | 515-7101-205   | P 011            | Shorting socket             | 515-5010-001   |
| EP010            | Pin .025" sq x .655" long   | 515-7101-205   | P 012            | Shorting socket             | 515-5010-001   |
| EP011            | Crystal pin insulator       | 018-1080-001   | P 013            | Shorting socket             | 515-5010-001   |
| EP012            | Heatsink insulator TO-220   | 574-5005-060   | P 014            | Shorting socket             | 515-5010-001   |
| HW001            | 4-40 x .063 NPB nut         | 560-2104-006   | P 015            | Shorting socket             | 515-5010-001   |
| HW002            | 4-40 panhead philips ZPS    | 575-1604-010   | P 016            | Shorting socket             | 515-5010-001   |
| HW003            | #4 x .046 shoulder washer   | 596-4504-008   | P 017            | Shorting socket             | 515-5010-001   |
| HW004            | 4-40 x .094 NPB nut         | 560-2104-008   | P 018            | Shorting socket             | 515-5010-001   |
| HW005            | 4-40 panhead philips ZPS    | 575-1604-010   | PC001            | PC board                    | 035-3039-280   |
| HW006            | #4 shakeproof washer        | 596-1104-008   | Q 001            | N-chnl E-MOSFET TO-92       | 576-0006-108   |
| HW007            | Ni plated card bracket      | 537-9056-070   | Q 002            | N-chnl E-MOSFET TO-92       | 576-0006-108   |
| J 002            | 2-pin single inline header  | 515-7100-002   | R 001            | 100k ohm multiturn pot      | 562-0109-104   |
| J 003            | 2-pin single inline header  | 515-7100-002   | R 002            | 100k ohm multiturn pot      | 562-0109-104   |
| J 004            | 2-pin single inline header  | 515-7100-002   | R 003            | 100k ohm multiturn pot      | 562-0109-104   |
| J 005            | 2-pin single inline header  | 515-7100-002   | R 004            | 100k ohm multiturn pot      | 562-0109-104   |
| J 007            | 25-pin rt angle D-sub w/ins | 515-0506-025   | R 005            | 100k ohm multiturn pot      | 562-0109-104   |
| J 008            | 2-pin single inline header  | 515-7100-002   | R 006            | 100k ohm multiturn pot      | 562-0109-104   |
| J 010            | 2-pin single inline header  | 515-7100-002   | R 007            | 100k ohm multiturn pot      | 562-0109-104   |
| J 011            | 2-pin single inline header  | 515-7100-002   | R 008            | 100k ohm multiturn pot      | 562-0109-104   |
| J 012            | 2-pin single inline header  | 515-7100-002   | R 009            | 100k ohm multiturn pot      | 562-0109-104   |
| J 013            | 2-pin single inline header  | 515-7100-002   | R 010            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| J 014            | 2-pin single inline header  | 515-7100-002   | R 011            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| J 015            | 2-pin single inline header  | 515-7100-002   | R 012            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| J 016            | 2-pin single inline header  | 515-7100-002   | R 013            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| J 017            | 2-pin single inline header  | 515-7100-002   | R 014            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   |
| J 018            | 2-pin single inline header  | 515-7100-002   | R 015            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| J 028            | 2-pin single inline header  | 515-7100-002   | R 016            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| J 029            | 2-pin single inline header  | 515-7100-002   | R 017            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| J 030            | 2-pin single inline header  | 515-7100-002   | R 018            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| J 031            | 2-pin single inline header  | 515-7100-002   | R 019            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   |
| MP001            | Heat sink TO-220            | 017-2221-034   | R 020            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| MP008            | Stainless steel spacer      | 317-7378-008   | R 021            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| P 001            | Shorting socket             | 515-5010-001   | R 022            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
|                  |                             |                | R 023            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
|                  |                             |                | R 024            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |

| SYMBOL<br>NUMBER | DESCRIPTION                 | PART<br>NUMBER | SYMBOL<br>NUMBER | DESCRIPTION                 | PART<br>NUMBER |
|------------------|-----------------------------|----------------|------------------|-----------------------------|----------------|
| R 025            | 270 ohm $\pm 5\%$ 1206 SMD  | 569-0115-271   | R 072            | 100 ohm $\pm 5\%$ 1206 SMD  | 569-0115-101   |
| R 026            | 270 ohm $\pm 5\%$ 1206 SMD  | 569-0115-271   | R 073            | 10 ohm $\pm 5\%$ 1206 SMD   | 569-0115-100   |
| R 027            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   | R 074            | 100 ohm $\pm 5\%$ 1206 SMD  | 569-0115-101   |
| R 028            | 270 ohm $\pm 5\%$ 1206 SMD  | 569-0115-271   | R 075            | 2.7 ohm $\pm 5\%$ 1206 SMD  | 569-0115-279   |
| R 029            | 620 ohm $\pm 5\%$ 1206 SMD  | 569-0115-621   | R 076            | 2.7 ohm $\pm 5\%$ 1206 SMD  | 569-0115-279   |
| R 030            | 620 ohm $\pm 5\%$ 1206 SMD  | 569-0115-621   | R 077            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| R 031            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 078            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| R 032            | 200k ohm $\pm 5\%$ 1206 SMD | 569-0115-204   | R 079            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| R 033            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 080            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   |
| R 034            | 200k ohm $\pm 5\%$ 1206 SMD | 569-0115-204   | R 081            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   |
| R 035            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 082            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| R 036            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 083            | 620 ohm $\pm 5\%$ 1206 SMD  | 569-0115-621   |
| R 037            | 200k ohm $\pm 5\%$ 1206 SMD | 569-0115-204   | R 084            | 200k ohm $\pm 5\%$ 1206 SMD | 569-0115-204   |
| R 038            | 200k ohm $\pm 5\%$ 1206 SMD | 569-0115-204   | R 085            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| R 039            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 086            | 200k ohm $\pm 5\%$ 1206 SMD | 569-0115-204   |
| R 040            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 087            | 300 ohm $\pm 5\%$ 1206 SMD  | 569-0115-301   |
| R 041            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 088            | 620 ohm $\pm 5\%$ 1206 SMD  | 569-0115-621   |
| R 042            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 089            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   |
| R 043            | 270 ohm $\pm 5\%$ 1206 SMD  | 569-0115-271   | R 090            | 3.9k ohm $\pm 5\%$ 1206 SMD | 569-0115-392   |
| R 044            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 091            | 620 ohm $\pm 5\%$ 1206 SMD  | 569-0115-621   |
| R 045            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 092            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| R 046            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 093            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| R 047            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 094            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| R 048            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   | R 095            | 1k ohm $\pm 5\%$ 1206 SMD   | 569-0115-102   |
| R 049            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 096            | 1k ohm $\pm 5\%$ 1206 SMD   | 569-0115-102   |
| R 050            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 097            | 620 ohm $\pm 5\%$ 1206 SMD  | 569-0115-621   |
| R 051            | 220k ohm $\pm 5\%$ 1206 SMD | 569-0115-224   | R 098            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| R 052            | 220k ohm $\pm 5\%$ 1206 SMD | 569-0115-224   | R 099            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |
| R 053            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 100            | 100k ohm multiterm pot      | 562-0109-104   |
| R 054            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 101            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| R 055            | 20k ohm $\pm 5\%$ 1206 SMD  | 569-0115-203   | R 102            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| R 056            | 20k ohm $\pm 5\%$ 1206 SMD  | 569-0115-203   | R 103            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   |
| R 057            | 20k ohm $\pm 5\%$ 1206 SMD  | 569-0115-203   | R 104            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   |
| R 058            | 20k ohm $\pm 5\%$ 1206 SMD  | 569-0115-203   | R 105            | 12k ohm $\pm 5\%$ 1206 SMD  | 569-0115-123   |
| R 059            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 106            | 1.5M ohm $\pm 5\%$ 1206 SMD | 569-0115-155   |
| R 060            | 2.2k ohm $\pm 5\%$ 1206 SMD | 569-0115-222   | R 109            | 100k ohm $\pm 5\%$ 1206 SMD | 569-0115-104   |
| R 061            | 220k ohm $\pm 5\%$ 1206 SMD | 569-0115-224   | R 110            | Zero ohm $\pm 5\%$ SMD 1206 | 569-0115-104   |
| R 062            | 220k ohm $\pm 5\%$ 1206 SMD | 569-0115-224   | R 111            | Zero ohm $\pm 5\%$ SMD 1206 | 569-0115-104   |
| R 063            | 220k ohm $\pm 5\%$ 1206 SMD | 569-0115-224   |                  |                             |                |
| R 064            | 220k ohm $\pm 5\%$ 1206 SMD | 569-0115-224   | RN001            | 22k ohm 9-res 10-pin SIP    | 569-6000-009   |
| R 065            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   | RN002            | 22k ohm 9-res 10-pin SIP    | 569-6000-009   |
| R 066            | 10k ohm $\pm 5\%$ 1206 SMD  | 569-0115-103   |                  |                             |                |
| R 067            | 22k ohm $\pm 5\%$ 1206 SMD  | 569-0115-223   | S 001            | 8-position dip switch       | 583-5002-008   |
| R 068            | 22k ohm $\pm 5\%$ 1206 SMD  | 569-0115-223   | S 002            | 8-position dip switch       | 583-5002-008   |
| R 069            | 300 ohm $\pm 5\%$ 1206 SMD  | 569-0115-301   |                  |                             |                |
| R 070            | 300 ohm $\pm 5\%$ 1206 SMD  | 569-0115-301   | U 001            | Quad 2-input NAND 74HC00    | 544-3766-000   |
| R 071            | 10 ohm $\pm 5\%$ 1206 SMD   | 569-0115-100   | U 002            | 8-bit equalzr/compartr SOIC | 544-3766-688   |

# PARTS LIST

| SYMBOL<br>NUMBER                                             | DESCRIPTION                     | PART<br>NUMBER | SYMBOL<br>NUMBER                                           | DESCRIPTION                     | PART<br>NUMBER |
|--------------------------------------------------------------|---------------------------------|----------------|------------------------------------------------------------|---------------------------------|----------------|
| U 003                                                        | 8-bit equalizer/comparator SOIC | 544-3766-688   | MP001                                                      | Speaker console panel           | 017-2222-241   |
| U 004                                                        | 1 of 16 demux SOIC 74HC154      | 544-3766-154   | MP002                                                      | 1/4" cable clamp                | 572-0001-003   |
| U 005                                                        | D flip-flop SOIC 74HC574        | 544-3766-574   |                                                            |                                 |                |
| U 006                                                        | D flip-flop SOIC 74HC574        | 544-3766-574   | PC001                                                      | PC board                        | 035-3039-260   |
| U 007                                                        | DTMF gen binary in 74HC165      | 544-4005-007   |                                                            |                                 |                |
| U 008                                                        | Bilateral switch SOIC 4066B     | 544-3016-066   | R 001                                                      | 3.3 ohm $\pm 10\%$ 5W WW        | 569-2006-339   |
| U 009                                                        | Quad op amp SOIC 3403           | 544-2020-008   | R 002                                                      | 3.3 ohm $\pm 10\%$ 5W WW        | 569-2006-339   |
| U 010                                                        | Quad op amp SOIC 3403           | 544-2020-008   |                                                            |                                 |                |
| U 011                                                        | Quad op amp SOIC 3403           | 544-2020-008   | T 001                                                      | Wall transformer                | 563-001-005    |
| U 012                                                        | Quad op amp SOIC 3403           | 544-2020-008   |                                                            |                                 |                |
| U 013                                                        | 10W audio pentawatt 74HC574     | 544-2006-013   | S 005                                                      | Lighted push-push switch        | 583-4020-001   |
| U 014                                                        | 10W audio pentawatt 74HC574     | 544-2006-013   |                                                            |                                 |                |
| U 015                                                        | Digital 100k ohm pot X9104      | 544-0004-202   | W 017                                                      | Speaker wire w/tini plug        | 597-2006-100   |
| U 016                                                        | Digital 100k ohm pot X9104      | 544-0004-202   | W 021                                                      | Speaker wire w/tini plug        | 597-2006-100   |
| U 017                                                        | Digital 100k ohm pot X9104      | 544-0004-202   |                                                            |                                 |                |
| U 018                                                        | Quad op amp SOIC 3403           | 544-2020-008   | <b>PCM SUMMATION BOARD</b><br><b>PART NO. 023-3039-780</b> |                                 |                |
| U 019                                                        | Quad op amp SOIC 3403           | 544-2020-008   |                                                            |                                 |                |
| U 021                                                        | Xparent latch SOIC 74HC573      | 544-3766-573   | C 00151                                                    | pF $\pm 5\%$ NPO 1206 chip      | 510-3602-510   |
| U 022                                                        | Bilateral switch SOIC 4066B     | 544-3016-066   | C 00251                                                    | pF $\pm 5\%$ NPO 1206 chip      | 510-3602-510   |
| U 027                                                        | RS232C/V.28 driver/receiver     | 544-2023-014   | C 0032200                                                  | pF $\pm 5\%$ NPO 1206 chip      | 510-3602-222   |
| U 028                                                        | D flip-flop SOIC 74HC574        | 544-3766-574   | C 0042200                                                  | pF $\pm 5\%$ NPO 1206 chip      | 510-3602-222   |
| U 029                                                        | Monostable multivibrator SO-16  | 544-3766-123   | C 005.001                                                  | $\mu$ F $\pm 5\%$ NPO 1206 chip | 510-3602-102   |
| Y 001                                                        | 3.5795 MHz crystal              | 521-0003-579   | C 006.001                                                  | $\mu$ F $\pm 5\%$ NPO 1206 chip | 510-3602-102   |
|                                                              |                                 |                | C 007.1                                                    | $\mu$ F $\pm 5\%$ X7R 1206      | 510-3609-104   |
| Z 001                                                        | EMI suppression filter          | 532-3003-002   | C 008.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| Z 002                                                        | EMI suppression filter          | 532-3003-002   | C 009.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| Z 003                                                        | EMI suppression filter          | 532-3003-002   | C 010.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
|                                                              |                                 |                | C 011.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| <b>SPEAKER CONSOLE PANEL</b><br><b>PART NO. 023-3039-260</b> |                                 |                | C 012.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| C 001                                                        | 1000 $\mu$ F 16V aluminum axial | 510-4325-102   | C 013.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| DS005                                                        | T-1.75 wedge base lamp          | 583-4020-003   | C 014.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW001                                                        | 8-32 x .125 CPS nut             | 560-1108-011   | C 015.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW002                                                        | 8 x .02 lock washer int CPS     | 596-1108-011   | C 016.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW003                                                        | 8 x .32 flat washer NPB         | 596-2408-012   | C 017.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW004                                                        | Foam speaker gasket             | 018-1126-001   | C 018.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW005                                                        | Button                          | 583-4020-002   | C 019.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW006                                                        | #4 shakeproof washer            | 596-1104-008   | C 020.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW007                                                        | 6 x .028 flat washer NPB        | 596-2406-010   | C 023.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW008                                                        | 4-40 panhead ZPS philips        | 575-1604-008   | C 024.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| HW009                                                        | 4-40 panhead ZPS philips        | 575-1604-012   | C 025.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
| LS001                                                        | 5" 15W 3.2 ohm spkr w/cloth     | 589-1016-002   | C 026.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
|                                                              |                                 |                | C 027.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
|                                                              |                                 |                | C 029.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
|                                                              |                                 |                | C 030.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
|                                                              |                                 |                | C 032.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |
|                                                              |                                 |                | C 033.01                                                   | $\mu$ F $\pm 10\%$ X7R chip     | 510-3606-103   |



| SYMBOL<br>NUMBER | DESCRIPTION                 | PART<br>NUMBER | SYMBOL<br>NUMBER                                            | DESCRIPTION                         | PART<br>NUMBER |
|------------------|-----------------------------|----------------|-------------------------------------------------------------|-------------------------------------|----------------|
| C 034            | 10 $\mu$ F 16V tantalum SMD | 510-2625-100   | U 001                                                       | 8 channel mux/demux                 | 544-3016-051   |
| C 035            | 10 $\mu$ F 16V tantalum SMD | 510-2625-100   | U 002                                                       | Hex inverter SOIC 74HC04            | 544-3766-004   |
| C 036            | 10 $\mu$ F 16V tantalum SMD | 510-2625-100   | U 003                                                       | Quad 2-in AND SOIC HC08             | 544-3766-008   |
| C 037            | 10 $\mu$ F 16V tantalum SMD | 510-2625-100   | U 004                                                       | Preset counter SOIC 74HC163         | 544-3766-163   |
| EP001            | Pin .025" sq x .655" long   | 515-7101-205   | U 005                                                       | Shift register SO-14 74HC164        | 544-3766-164   |
| EP002            | Pin .025" sq x .655" long   | 515-7101-205   | U 006                                                       | 8-bit shift register 74HC165        | 544-3766-165   |
| EP003            | Pin .025" sq x .655" long   | 515-7101-205   | U 007                                                       | 8-bit shift register 74HC165        | 544-3766-165   |
| EP004            | Pin .025" sq x .655" long   | 515-7101-205   | U 008                                                       | 8-bit shift register 74HC165        | 544-3766-165   |
| HW001            | 4-40 panhead philips ZPS    | 575-1604-008   | U 009                                                       | 8-bit shift register 74HC165        | 544-3766-165   |
| HW002            | #4 shakeproof washer        | 596-1104-008   | U 010                                                       | D flip flop SOIC 74HC574            | 544-3766-574   |
| HW003            | 4-40 x .063 nut NPB         | 560-2104-006   | U 011                                                       | D flip flop SOIC 74HC574            | 544-3766-574   |
| J 001            | 11-pos receptacle SIP       | 515-5012-011   | U 012                                                       | D flip flop SOIC 74HC574            | 544-3766-574   |
| J 003            | 2-pin rt angle PC mt conntr | 515-9031-007   | U 013                                                       | D flip flop SOIC 74HC574            | 544-3766-574   |
| J 004            | 3-pin rt angle PC mt conntr | 515-9031-008   | U 014                                                       | D flip flop SOIC 74HC574            | 544-3766-574   |
| MP001            | PC board spacer             | 115-0260-011   | U 015                                                       | D flip flop SOIC 74HC574            | 544-3766-574   |
| P 001            | 11-pin single row header    | 515-9031-481   | U 016                                                       | D/A convertr DIP-18 DAC88           | 544-2034-002   |
| R 001            | 100k ohm multiturn pot      | 562-0109-104   | U 017                                                       | -5V voltage regulator LM320T        | 544-2003-034   |
| R 002            | 2.7k ohm $\pm$ 5% 1206 SMD  | 569-0115-272   | U 018                                                       | Quad op amp 3403                    | 544-2020-008   |
| R 003            | 2.7k ohm $\pm$ 5% 1206 SMD  | 569-0115-272   | U 019                                                       | JFET op amp SOIC                    | 544-2020-016   |
| R 004            | 43k ohm $\pm$ 5% 1206 SMD   | 569-0115-433   | U 020                                                       | 16-pin Tx/Rx filter PC mt           | 544-2038-003   |
| R 005            | 43k ohm $\pm$ 5% 1206 SMD   | 569-0115-433   | W 001                                                       | 11-cond flex cable 6.5" long        | 597-0016-013   |
| R 006            | 18k ohm $\pm$ 5% 1206 SMD   | 569-0115-183   | <b>911 INTERFACE MODULE</b><br><b>PART NO. 023-3039-900</b> |                                     |                |
| R 007            | 18k ohm $\pm$ 5% 1206 SMD   | 569-0115-183   |                                                             |                                     |                |
| R 008            | 1k ohm $\pm$ 5% 1206 SMD    | 569-0115-102   | C 001                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 009            | 3k ohm $\pm$ 5% 1206 SMD    | 569-0115-302   | C 002                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 010            | 6.8k ohm $\pm$ 5% 1206 SMD  | 569-0115-682   | C 003                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 011            | 15k ohm $\pm$ 5% 1206 SMD   | 569-0115-153   | C 004                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 012            | 30k ohm $\pm$ 5% 1206 SMD   | 569-0115-303   | C 005                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 013            | 62k ohm $\pm$ 5% 1206 SMD   | 569-0115-623   | C 006                                                       | 2.2 $\mu$ F 20V tantalum SMD        | 510-2626-229   |
| R 014            | 120k ohm $\pm$ 5% 1206 SMD  | 569-0115-124   | C 007                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 015            | 240k ohm $\pm$ 5% 1206 SMD  | 569-0115-244   | C 008                                                       | 47 $\mu$ F 10V tantalum SMD         | 510-2624-470   |
| R 016            | 510 ohm $\pm$ 5% 1206 SMD   | 569-0115-511   | C 009                                                       | 47 $\mu$ F 10V tantalum SMD         | 510-2624-470   |
| R 017            | 750k ohm $\pm$ 5% 1206 SMD  | 569-0115-754   | C 010                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 018            | 10k ohm $\pm$ 5% 1206 SMD   | 569-0115-103   | C 011                                                       | 47 $\mu$ F 10V tantalum SMD         | 510-2624-470   |
| R 019            | 10k ohm $\pm$ 5% 1206 SMD   | 569-0115-103   | C 012                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 020            | 10k ohm $\pm$ 5% 1206 SMD   | 569-0115-103   | C 013                                                       | .01 $\mu$ F $\pm$ 10% X7R 0805 chip | 510-3605-103   |
| R 021            | 300 ohm $\pm$ 5% 1206 SMD   | 569-0115-301   | C 014                                                       | 10 $\mu$ F 16V tantalum SMD         | 510-2625-100   |
| R 022            | 300 ohm $\pm$ 5% 1206 SMD   | 569-0115-301   | C 015                                                       | 4.7 $\mu$ F 10V tantalum SMD        | 510-2624-479   |
| R 023            | 4.99k ohm $\pm$ 1% 1206 SMD | 569-0111-368   | C 016                                                       | .1 $\mu$ F $\pm$ 10% X7R 1210       | 510-3607-104   |
| R 024            | 12.1k ohm $\pm$ 1% 1206 SMD | 569-0111-409   | C 017                                                       | .1 $\mu$ F $\pm$ 10% X7R 1210       | 510-3607-104   |
| R 025            | 100k ohm multiturn pot      | 562-0109-104   | C 018                                                       | 2.2 $\mu$ F 20V tantalum SMD        | 510-2626-229   |
|                  |                             |                | C 019                                                       | 10 $\mu$ F 16V tantalum SMD         | 510-2625-100   |
|                  |                             |                | C 020                                                       | 4.7 $\mu$ F 10V tantalum SMD        | 510-2624-479   |
|                  |                             |                | C 021                                                       | .1 $\mu$ F $\pm$ 10% X7R 1210       | 510-3607-104   |

# PARTS LIST

| SYMBOL<br>NUMBER | DESCRIPTION                   | PART<br>NUMBER | SYMBOL<br>NUMBER | DESCRIPTION                     | PART<br>NUMBER |
|------------------|-------------------------------|----------------|------------------|---------------------------------|----------------|
| C 022            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 071            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 023            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | C 072            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 024            | 10 $\mu$ F 16V tantalum SMD   | 510-2625-100   | C 073            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 025            | 4.7 $\mu$ F 10V tantalum SMD  | 510-2624-479   | C 074            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 026            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 075            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 027            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 076            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 028            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | C 077            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 031            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 078            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 032            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 079            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 033            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | C 080            | 1000 $\mu$ F 16V aluminum axial | 510-4316-102   |
| C 034            | 10 $\mu$ F 16V tantalum SMD   | 510-2625-100   | C 081            | 10 $\mu$ F 16V tantalum SMD     | 510-2625-100   |
| C 035            | 4.7 $\mu$ F 10V tantalum SMD  | 510-2624-479   | C 082            | .047 $\mu$ F $\pm$ 10% X7R chip | 510-3606-473   |
| C 036            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 083            | 10 $\mu$ F 63V axial low temp   | 510-4363-100   |
| C 037            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 084            | 10 $\mu$ F 63V axial low temp   | 510-4363-100   |
| C 038            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | C 085            | 10 $\mu$ F 63V axial low temp   | 510-4363-100   |
| C 039            | 10 $\mu$ F 16V tantalum SMD   | 510-2625-100   | C 086            | 10 $\mu$ F 63V axial low temp   | 510-4363-100   |
| C 040            | 4.7 $\mu$ F 10V tantalum SMD  | 510-2624-479   | C 090            | 10 $\mu$ F 16V tantalum SMD     | 510-2625-100   |
| C 041            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 091            | 4.7 $\mu$ F 10V tantalum SMD    | 510-2624-479   |
| C 042            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 092            | .1 $\mu$ F $\pm$ 10% X7R 1210   | 510-3607-104   |
| C 043            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | C 093            | .1 $\mu$ F $\pm$ 10% X7R 1210   | 510-3607-104   |
| C 044            | 10 $\mu$ F 16V tantalum SMD   | 510-2625-100   | C 094            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 045            | 4.7 $\mu$ F 10V tantalum SMD  | 510-2624-479   | C 096            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 046            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 097            | 2.2 $\mu$ F 20V tantalum SMD    | 510-2626-229   |
| C 047            | .1 $\mu$ F $\pm$ 10% X7R 1210 | 510-3607-104   | C 099            | 47 $\mu$ F 10V tantalum SMD     | 510-2624-470   |
| C 048            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | CR001            | Switching diode SOT-23          | 523-1504-002   |
| C 049            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | CR002            | Switching diode SOT-23          | 523-1504-002   |
| C 051            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | CR003            | Switching diode SOT-23          | 523-1504-002   |
| C 052            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | CR004            | Switching diode SOT-23          | 523-1504-002   |
| C 053            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | CR005            | Switching diode SOT-23          | 523-1504-002   |
| C 054            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | CR006            | Switching diode SOT-23          | 523-1504-002   |
| C 055            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | CR007            | Switching diode SOT-23          | 523-1504-002   |
| C 056            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | EP001            | 2-pos shorting socket           | 515-5010-001   |
| C 057            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | EP002            | Heat sink insulator TO-220      | 574-5005-060   |
| C 058            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | HW001            | 4-40 machine panhead ZPS        | 575-1604-010   |
| C 059            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | HW001            | 4-40 machine panhead XPS        | 575-1604-008   |
| C 060            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | HW002            | #4 shakeproof washer            | 596-1104-008   |
| C 061            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | HW003            | 4-40 x 0.063 nut NPB            | 560-2104-006   |
| C 062            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | HW004            | Flexible grommet                | 574-0001-025   |
| C 063            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | J 001            | 25-pin right angle D-submin     | 515-0506-025   |
| C 064            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | J 004            | 3.6mm encl jack (supvr mic)     | 515-2001-011   |
| C 065            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | J 005            | 3.6mm encl jack (bkgn d spkr)   | 515-2001-011   |
| C 066            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | J 008            | 26-pin mini-terminal block      | 515-7110-426   |
| C 067            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   | J 009            | 26-pin mini-terminal block      | 515-7110-426   |
| C 068            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   |                  |                                 |                |
| C 069            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   |                  |                                 |                |
| C 070            | 2.2 $\mu$ F 20V tantalum SMD  | 510-2626-229   |                  |                                 |                |

| SYMBOL<br>NUMBER | DESCRIPTION                | PART<br>NUMBER | SYMBOL<br>NUMBER | DESCRIPTION                    | PART<br>NUMBER |
|------------------|----------------------------|----------------|------------------|--------------------------------|----------------|
| J 013            | 3-pin single inline header | 515-7100-003   | J 081            | 3-pin single inline header     | 515-7100-003   |
| J 014            | 3-pin single inline header | 515-7100-003   | J 082            | 3-pin single inline header     | 515-7100-003   |
| J 015            | 3-pin single inline header | 515-7100-003   | J 083            | 2-pin single inline header     | 515-7100-002   |
| J 016            | 3-pin single inline header | 515-7100-003   | J 099            | 2-pin single inline header     | 515-7100-002   |
| J 017            | 3-pin single inline header | 515-7100-003   |                  |                                |                |
| J 018            | 3-pin single inline header | 515-7100-003   | MP001            | Heatsink TO-220 solder tab     | 539-0009-100   |
| J 019            | 3-pin single inline header | 515-7100-003   | MP002            | Interface board cover          | 018-1007-200   |
| J 020            | 6-pin double row header    | 515-7100-506   | MP003            | Min support post               | 574-5010-005   |
| J 021            | 3-pin single inline header | 515-7100-003   | MP004            | Rack panel interface           | 017-2210-200   |
| J 022            | 3-pin single inline header | 515-7100-003   | MP005            | 3/16 hex 4-40 shoulder spacer  | 013-1139-018   |
| J 023            | 3-pin single inline header | 515-7100-003   |                  |                                |                |
| J 024            | 2-pin single inline header | 515-7100-002   | P 001            | 9-pos right angle D-submin     | 515-0506-042   |
| J 026            | 3-pin single inline header | 515-7100-003   | P 002            | 16-pos right angle shrd header | 515-7104-108   |
| J 027            | 3-pin single inline header | 515-7100-003   |                  |                                |                |
| J 028            | 3-pin single inline header | 515-7100-003   | PC000            | PC board                       | 035-3039-900   |
| J 029            | 2-pin single inline header | 515-7100-002   |                  |                                |                |
| J 031            | 3-pin single inline header | 515-7100-003   | Q 001            | Si NPN SOT-23                  | 576-0003-658   |
| J 032            | 3-pin single inline header | 515-7100-003   | Q 002            | Si NPN SOT-23                  | 576-0003-658   |
| J 033            | 3-pin single inline header | 515-7100-003   |                  |                                |                |
| J 034            | 2-pin single inline header | 515-7100-002   | R 001            | 500k ohm multiturn pot         | 562-0110-504   |
| J 036            | 3-pin single inline header | 515-7100-003   | R 002            | 500k ohm multiturn pot         | 562-0110-504   |
| J 037            | 3-pin single inline header | 515-7100-003   | R 003            | 500k ohm multiturn pot         | 562-0110-504   |
| J 038            | 3-pin single inline header | 515-7100-003   | R 004            | 100k ohm trim pot              | 562-0110-104   |
| J 039            | 2-pin single inline header | 515-7100-002   | R 005            | 100k ohm trim pot              | 562-0110-104   |
| J 041            | 3-pin single inline header | 515-7100-003   | R 006            | 100k ohm trim pot              | 562-0110-104   |
| J 042            | 3-pin single inline header | 515-7100-003   | R 007            | 100k ohm trim pot              | 562-0110-104   |
| J 043            | 3-pin single inline header | 515-7100-003   | R 008            | 500k ohm multiturn pot         | 562-0110-504   |
| J 044            | 2-pin single inline header | 515-7100-002   | R 009            | 500k ohm multiturn pot         | 562-0110-504   |
| J 046            | 3-pin single inline header | 515-7100-003   | R 010            | 100k ohm trim pot              | 562-0110-104   |
| J 047            | 3-pin single inline header | 515-7100-003   | R 011            | 100k ohm trim pot              | 562-0110-104   |
| J 048            | 3-pin single inline header | 515-7100-003   | R 012            | 100k ohm trim pot              | 562-0110-104   |
| J 049            | 2-pin single inline header | 515-7100-002   | R 013            | 100k ohm trim pot              | 562-0110-104   |
| J 051            | 6-pin double row header    | 515-7100-506   | R 014            | 100k ohm trim pot              | 562-0110-104   |
| J 052            | 6-pin double row header    | 515-7100-506   | R 015            | 100k ohm trim pot              | 562-0110-104   |
| J 056            | 6-pin double row header    | 515-7100-506   | R 016            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 057            | 6-pin double row header    | 515-7100-506   | R 017            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 061            | 6-pin double row header    | 515-7100-506   | R 018            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 062            | 6-pin double row header    | 515-7100-506   | R 019            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 063            | 6-pin double row header    | 515-7100-506   | R 020            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 064            | 6-pin double row header    | 515-7100-506   | R 021            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 065            | 6-pin double row header    | 515-7100-506   | R 022            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 066            | 6-pin double row header    | 515-7100-506   | R 023            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 067            | 6-pin double row header    | 515-7100-506   | R 024            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 068            | 6-pin double row header    | 515-7100-506   | R 025            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 069            | 6-pin double row header    | 515-7100-506   | R 026            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 070            | 6-pin double row header    | 515-7100-506   | R 027            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |
| J 080            | 3-pin single inline header | 515-7100-003   | R 028            | 10k ohm $\pm 5\%$ 0805 chip    | 569-0105-103   |

# PARTS LIST

| SYMBOL<br>NUMBER | DESCRIPTION                  | PART<br>NUMBER | SYMBOL<br>NUMBER | DESCRIPTION                  | PART<br>NUMBER |
|------------------|------------------------------|----------------|------------------|------------------------------|----------------|
| R 029            | 10k ohm $\pm 5\%$ 0805 chip  | 569-0105-103   | R 081            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 030            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 082            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 031            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 083            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 032            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 084            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 033            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 085            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 034            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   | R 086            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 035            | 120 ohm $\pm 5\%$ 0805 chip  | 569-0105-121   | R 087            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 036            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 088            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 037            | 910 ohm $\pm 5\%$ 0805 chip  | 569-0105-911   | R 089            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 038            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 090            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   |
| R 039            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 091            | 120 ohm $\pm 5\%$ 0805 chip  | 569-0105-121   |
| R 040            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 092            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 041            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 093            | 910 ohm $\pm 5\%$ 0805 chip  | 569-0105-911   |
| R 042            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 094            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 043            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 095            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 044            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 096            | 47k ohm $\pm 5\%$ 0805 chip  | 569-0105-473   |
| R 045            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 097            | 47k ohm $\pm 5\%$ 0805 chip  | 569-0105-473   |
| R 046            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 098            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 047            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 099            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 048            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   | R 100            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 049            | 120 ohm $\pm 5\%$ 0805 chip  | 569-0105-121   | R 101            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 050            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 102            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 051            | 910 ohm $\pm 5\%$ 0805 chip  | 569-0105-911   | R 103            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 052            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 104            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   |
| R 053            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 105            | 120 ohm $\pm 5\%$ 0805 chip  | 569-0105-121   |
| R 054            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 106            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 055            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 107            | 910 ohm $\pm 5\%$ 0805 chip  | 569-0105-911   |
| R 056            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 108            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 057            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 109            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 058            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 110            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 059            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 111            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 060            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 112            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 061            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 113            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 062            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   | R 114            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 063            | 120 ohm $\pm 5\%$ 0805 chip  | 569-0105-121   | R 115            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 064            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 116            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 065            | 910 ohm $\pm 5\%$ 0805 chip  | 569-0105-911   | R 117            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 066            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 118            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   |
| R 067            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 119            | 120 ohm $\pm 5\%$ 0805 chip  | 569-0105-121   |
| R 068            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 120            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   |
| R 069            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 121            | 910 ohm $\pm 5\%$ 0805 chip  | 569-0105-911   |
| R 070            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 122            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 071            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 123            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 077            | 120 ohm $\pm 5\%$ 0805 chip  | 569-0105-121   | R 124            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 078            | 620 ohm $\pm 5\%$ 0805 chip  | 569-0105-621   | R 125            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 079            | 910 ohm $\pm 5\%$ 0805 chip  | 569-0105-911   | R 126            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 080            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 127            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |

| SYMBOL<br>NUMBER | DESCRIPTION                  | PART<br>NUMBER | SYMBOL<br>NUMBER | DESCRIPTION                  | PART<br>NUMBER |
|------------------|------------------------------|----------------|------------------|------------------------------|----------------|
| R 128            | 10k ohm $\pm 5\%$ 0805 chip  | 569-0105-103   | R 175            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 129            | 10k ohm $\pm 5\%$ 0805 chip  | 569-0105-103   | R 176            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 130            | 10k ohm $\pm 5\%$ 0805 chip  | 569-0105-103   | R 177            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 131            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   | R 178            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 132            | 3.9k ohm $\pm 5\%$ 0805 chip | 569-0105-392   | R 179            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 133            | 9.1k ohm $\pm 5\%$ 0805 chip | 569-0105-912   | R 180            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 134            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 181            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 135            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 182            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 136            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 183            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 137            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 184            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 138            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 185            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 139            | 51k ohm $\pm 5\%$ 0805 chip  | 569-0105-513   | R 186            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 140            | 51k ohm $\pm 5\%$ 0805 chip  | 569-0105-513   | R 187            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 141            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 188            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 142            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 189            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 143            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 190            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 144            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   | R 191            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 145            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 192            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 146            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   | R 193            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 147            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   | R 194            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 148            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 195            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 149            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   | R 196            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 150            | 51k ohm $\pm 5\%$ 0805 chip  | 569-0105-513   | R 197            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 151            | 51k ohm $\pm 5\%$ 0805 chip  | 569-0105-513   | R 198            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 152            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 199            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 153            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 200            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 154            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 201            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 155            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   | R 202            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 156            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 203            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 157            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   | R 204            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 158            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   | R 205            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 159            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 206            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 160            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   | R 207            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 161            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 208            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   |
| R 162            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 209            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   |
| R 163            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 210            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   |
| R 164            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 211            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 165            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   | R 212            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   |
| R 166            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 213            | 10k ohm $\pm 5\%$ 0805 chip  | 569-0105-103   |
| R 167            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   | R 214            | 10k ohm $\pm 5\%$ 0805 chip  | 569-0105-103   |
| R 168            | 430 ohm $\pm 5\%$ 0805 chip  | 569-0105-431   | R 215            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 169            | 300 ohm $\pm 5\%$ 0805 chip  | 569-0105-301   | R 216            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 170            | 68 ohm $\pm 5\%$ 0805 chip   | 569-0105-680   | R 217            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 171            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 218            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 172            | 2.2k ohm $\pm 5\%$ 0805 chip | 569-0105-222   | R 219            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 173            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 220            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |
| R 174            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   | R 221            | 100k ohm $\pm 5\%$ 0805 chip | 569-0105-104   |

## PARTS LIST

| SYMBOL<br>NUMBERDESCRIPTIONPART<br>NUMBER |                           |              | SYMBOL<br>NUMBERDESCRIPTIONPART<br>NUMBER |                             |              |
|-------------------------------------------|---------------------------|--------------|-------------------------------------------|-----------------------------|--------------|
| R 222                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 | U 008                                     | Quad op amp SOIC            | 544-2020-008 |
| R 223                                     | 100 ohm ±5% 0805 chip     | 569-0105-101 | U 009                                     | Quad op amp SOIC            | 544-2020-008 |
| R 224                                     | 10 ohm ±5% 0805 chip      | 569-0105-100 | U 010                                     | Quad op amp SOIC            | 544-2020-008 |
| R 225                                     | 2.7 ohm ±5% 0805 chip     | 569-0105-279 | U 011                                     | Quad op amp SOIC            | 544-2020-008 |
| R 227                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 | U 012                                     | Bilateral switch SOIC 4066B | 544-3016-066 |
| R 230                                     | 300 ohm ±5% 0805 chip     | 569-0105-301 | U 013                                     | Bilateral switch SOIC 4066B | 544-3016-066 |
| R 231                                     | 620 ohm ±5% 0805 chip     | 569-0105-621 | U 014                                     | Bilateral switch SOIC 4066B | 544-3016-066 |
| R 232                                     | 620 ohm ±5% 0805 chip     | 569-0105-621 | U 015                                     | Bilateral switch SOIC 4066B | 544-3016-066 |
| R 233                                     | 2.2k ohm ±5% 0805 chip    | 569-0105-222 | U 016                                     | +9V regulator TO-220        | 544-2003-059 |
| R 234                                     | 3.9k ohm ±5% 0805 chip    | 569-0105-392 | U 017                                     | +5V regulator TO-220 7805   | 544-2003-016 |
| R 235                                     | 120 ohm ±5% 0805 chip     | 569-0105-121 | U 018                                     | 10W Audio amp TDA2003       | 544-2006-015 |
| R 236                                     | 620 ohm ±5% 0805 chip     | 569-0105-621 | U 019                                     | Quad op amp SOIC            | 544-2020-008 |
| R 237                                     | 910 ohm ±5% 0805 chip     | 569-0105-911 |                                           |                             |              |
| R 238                                     | 100k ohm ±5% 0805 chip    | 569-0105-104 | <b>JACK BOX</b>                           |                             |              |
| R 239                                     | 100k ohm ±5% 0805 chip    | 569-0105-104 | <b>PART NO. 023-3039-910</b>              |                             |              |
| R 240                                     | 100k ohm ±5% 0805 chip    | 569-0105-104 |                                           |                             |              |
| R 241                                     | 100k ohm ±5% 0805 chip    | 569-0105-104 | CR001                                     | Si diode                    | 523-1500-883 |
| R 242                                     | 2.2k ohm ±5% 0805 chip    | 569-0105-222 | CR002                                     | Si diode                    | 523-1500-883 |
| R 243                                     | 2.2k ohm ±5% 0805 chip    | 569-0105-222 |                                           |                             |              |
| R 250                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 | EP001                                     | Receptacle pin contact      | 515-9024-011 |
| R 251                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 |                                           |                             |              |
| R 252                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 | HW001                                     | Strain relief               | 574-0003-009 |
| R 255                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 | HW002                                     | 4-40 x .25 panhead taptite  | 575-0604-008 |
| R 256                                     | 100k ohm ±5% 0805 chip    | 569-0105-104 | HW003                                     | 1/4" heatshrink tubing      | 042-0241-555 |
| R 257                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 |                                           |                             |              |
| R 300                                     | Zero ohm ±5% 0805 chip    | 569-0105-001 | J 001                                     | 1/4" jack                   | 515-0020-005 |
| R 301                                     | Zero ohm ±5% 0805 chip    | 569-0105-001 | J 002                                     | 1/4" jack                   | 515-0020-005 |
| R 302                                     | Zero ohm ±5% 0805 chip    | 569-0105-001 | J 003                                     | 1/4" jack                   | 515-0020-005 |
| R 303                                     | Zero ohm ±5% 0805 chip    | 569-0105-001 | J 004                                     | 1/4" jack                   | 515-0020-005 |
| R 304                                     | Zero ohm ±5% 0805 chip    | 569-0105-001 |                                           |                             |              |
| R 305                                     | 10k ohm ±5% 0805 chip     | 569-0105-103 | J 005                                     | 16-pin receptacle           | 515-1538-016 |
| R 306                                     | 1k ohm ±5% 0805 chip      | 569-0105-102 |                                           |                             |              |
| T 001                                     | 600 ohm modem transformer | 592-1015-008 | MP001                                     | Module box                  | 014-0777-025 |
| T 002                                     | 600 ohm modem transformer | 592-1015-008 | MP002                                     | Panel strain relief         | 017-2210-201 |
| TP001                                     | White vertical tip jack   | 105-2201-201 | MP003                                     | Jack panel                  | 017-2210-202 |
| TP002                                     | Green vertical tip jack   | 105-2204-201 | MP004                                     | 0.688 knob 0.25W/0.156      | 547-0008-011 |
| TP003                                     | Yellow vertical tip jack  | 105-2207-201 | S 001                                     | Adjustable stop switch      | 583-2009-010 |
| U 001                                     | Hex inverter SOIC 74HC04  | 544-3766-004 | W 001                                     | 15 conductor cable          | 597-4002-080 |
| U 002                                     | Quad 2-in AND SOIC HC08   | 544-3766-008 |                                           |                             |              |
| U 003                                     | Quad 2-in NAND 74HC00     | 544-3766-000 |                                           |                             |              |
| U 004                                     | Quad op amp SOIC          | 544-2020-008 |                                           |                             |              |
| U 005                                     | Quad op amp SOIC          | 544-2020-008 |                                           |                             |              |
| U 006                                     | Quad op amp SOIC          | 544-2020-008 |                                           |                             |              |
| U 007                                     | Quad op amp SOIC          | 544-2020-008 |                                           |                             |              |

SECTION 8 SCHEMATICS AND COMPONENT LAYOUTS

Transistors  
(Bottom View Unless Otherwise Specified)

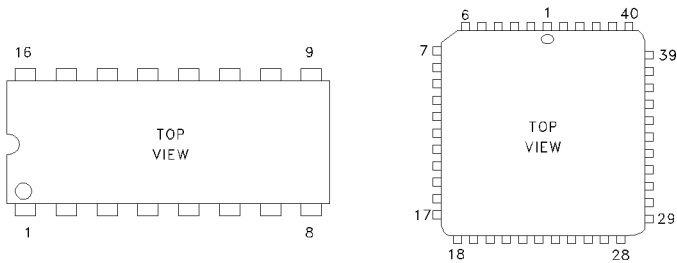
| TRANSISTOR BASING DIAGRAM<br>REFERENCE TABLE |                    |
|----------------------------------------------|--------------------|
| Transistor Part No.                          | Basing Diagram No. |
| 576-0006-108                                 | 1                  |



1

INTEGRATED CIRCUITS

Typical Integrated Circuit Pin Numbering



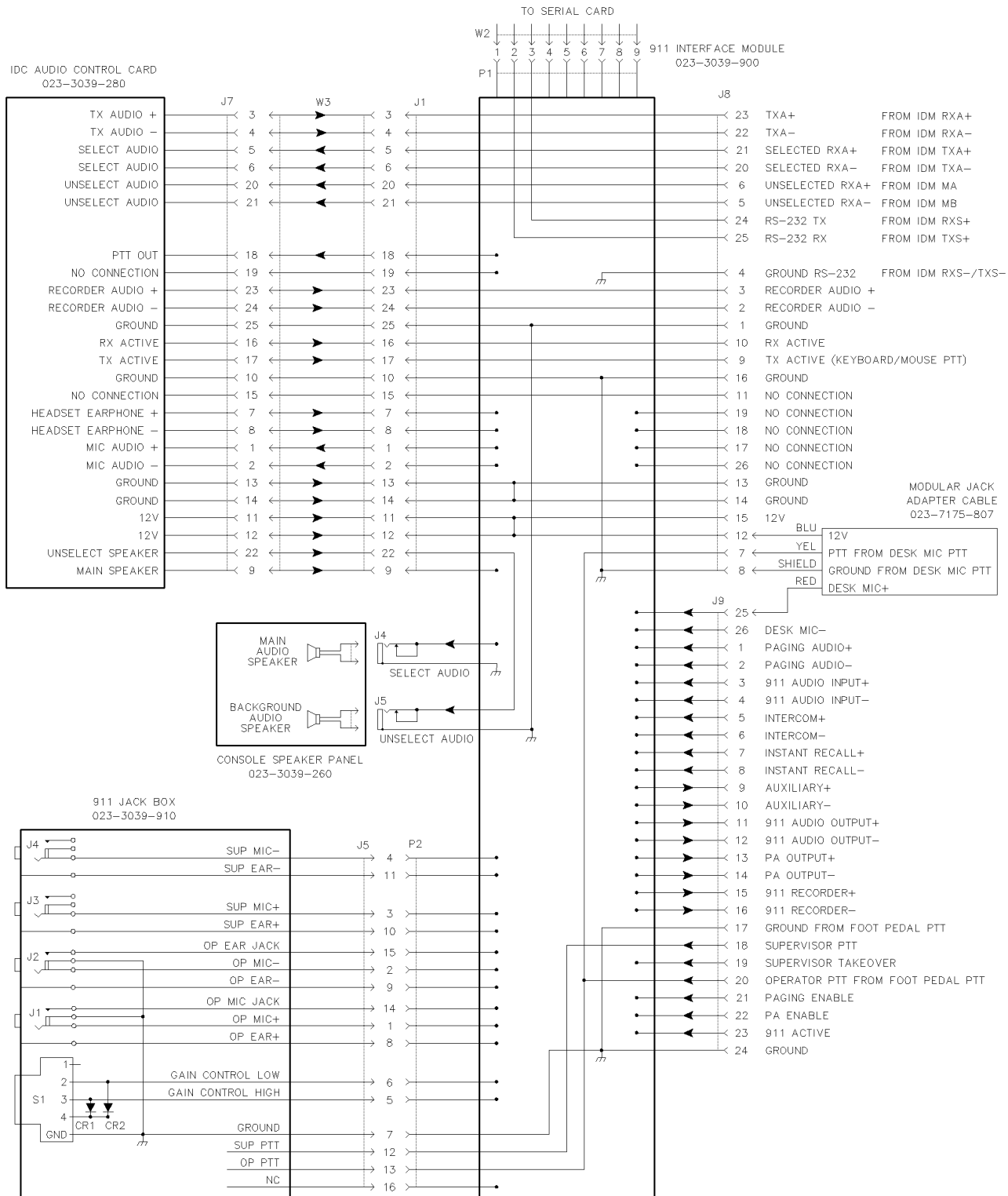
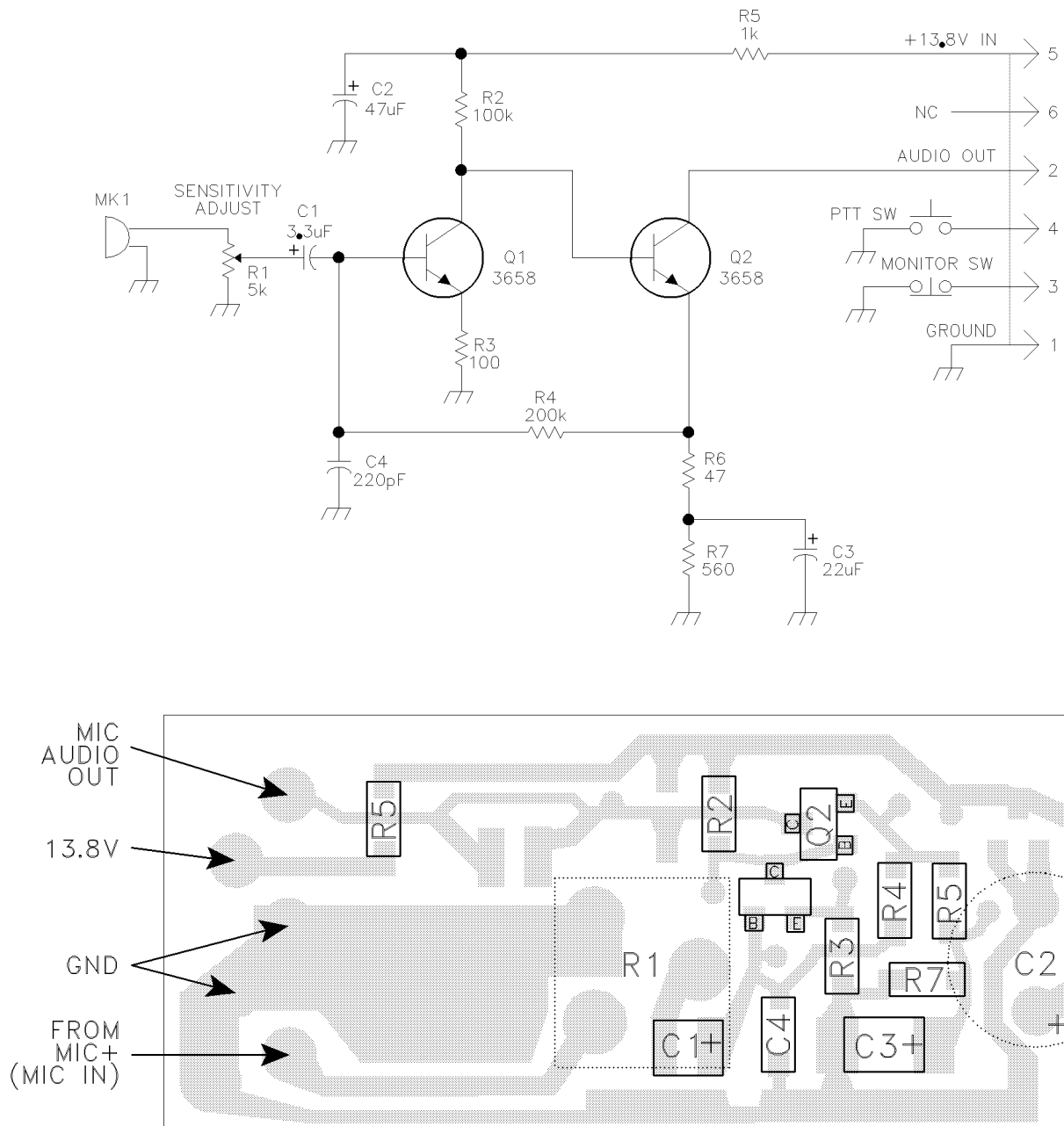


Figure 8-1 911 INTERFACE MODULE CONSOLE INTERCONNECT





**Figure 8-2 DESK MICROPHONE SCHEMATIC AND BOARD LAYOUT**

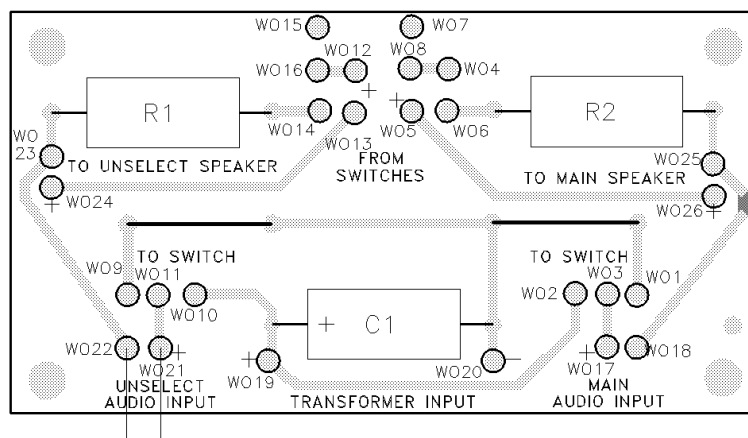


Figure 8-3 CONSOLE AUDIO PANEL COMPONENT LAYOUT

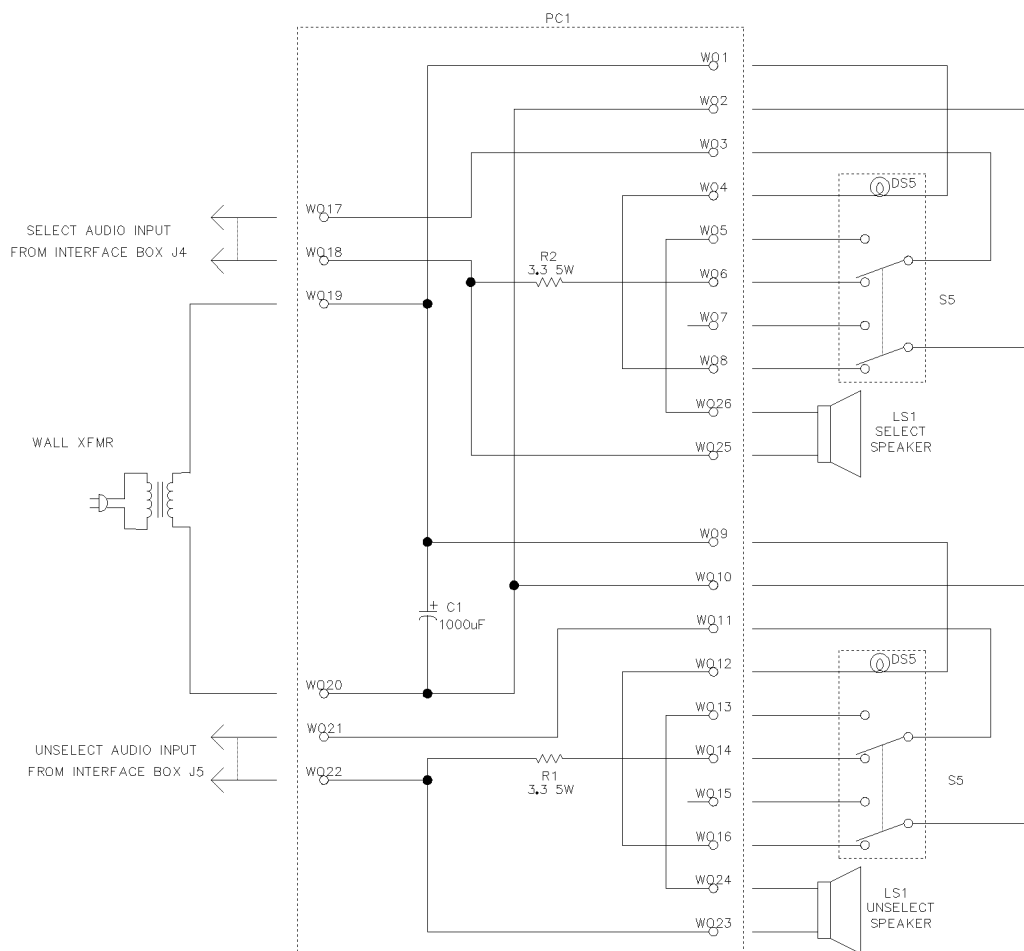
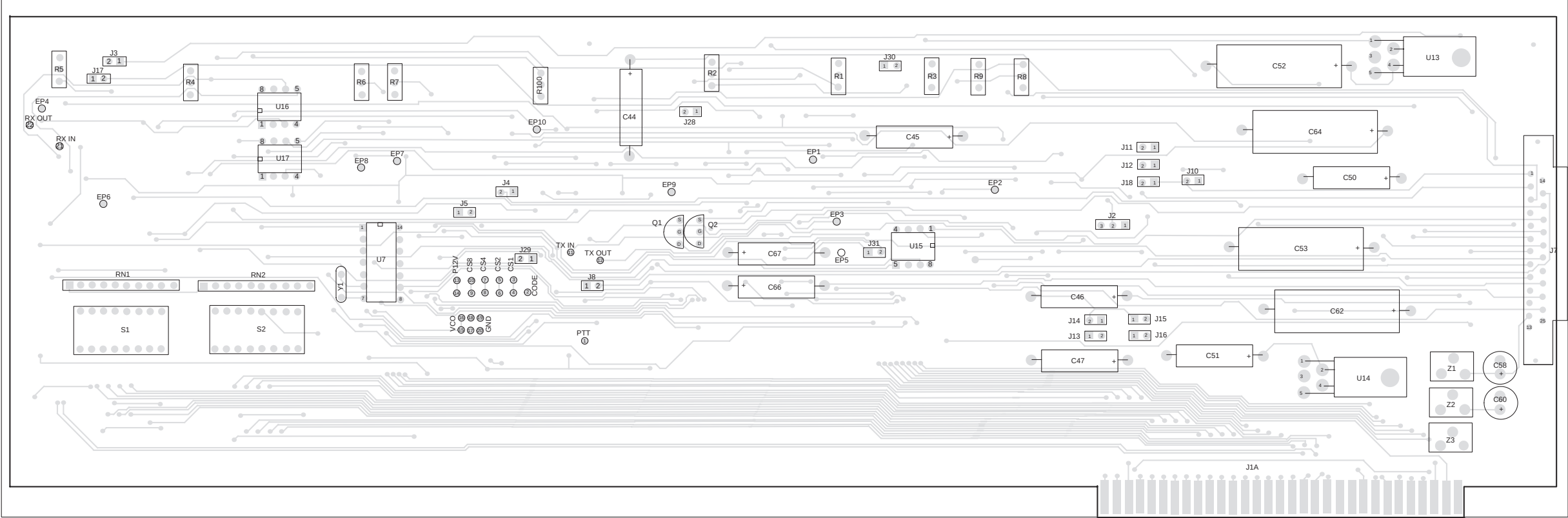
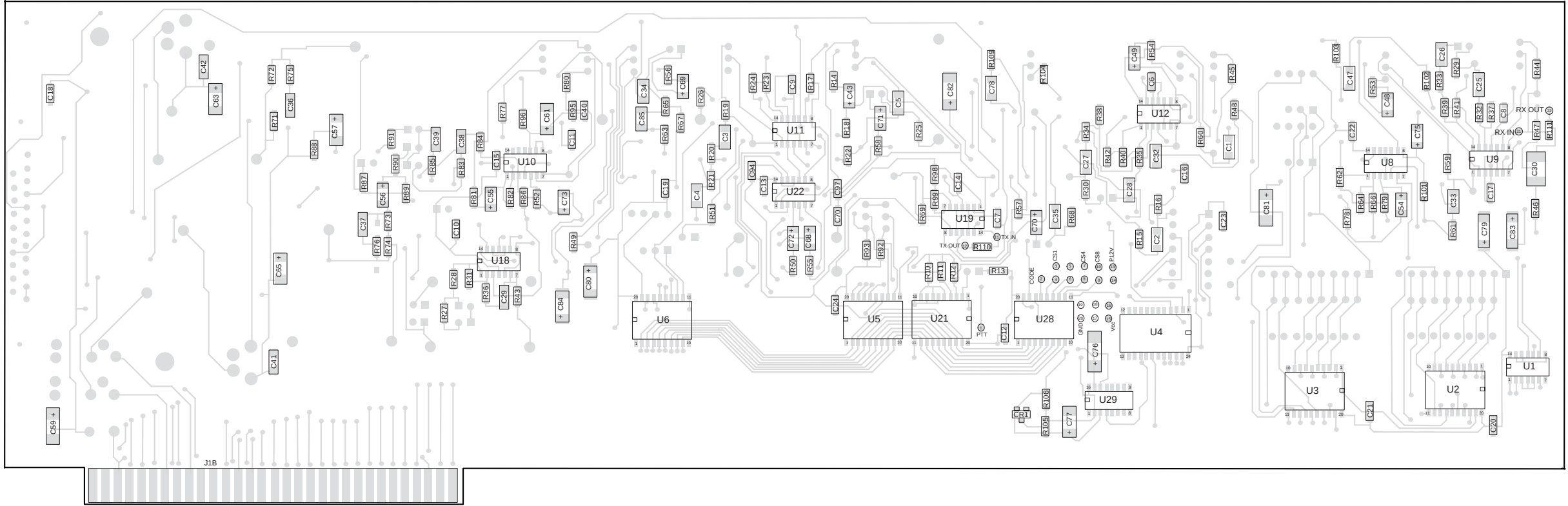


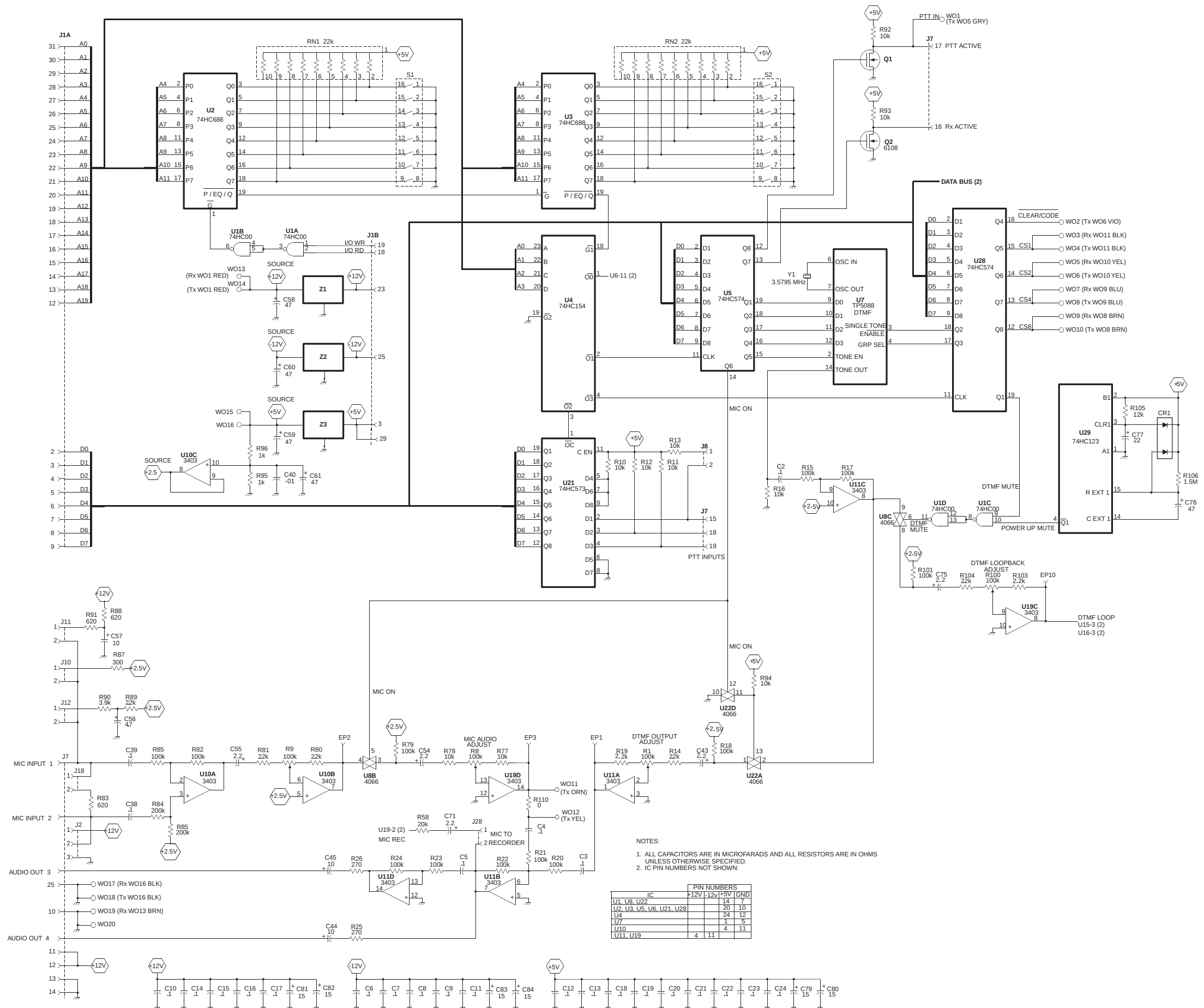
Figure 8-4 CONSOLE AUDIO PANEL SCHEMATIC



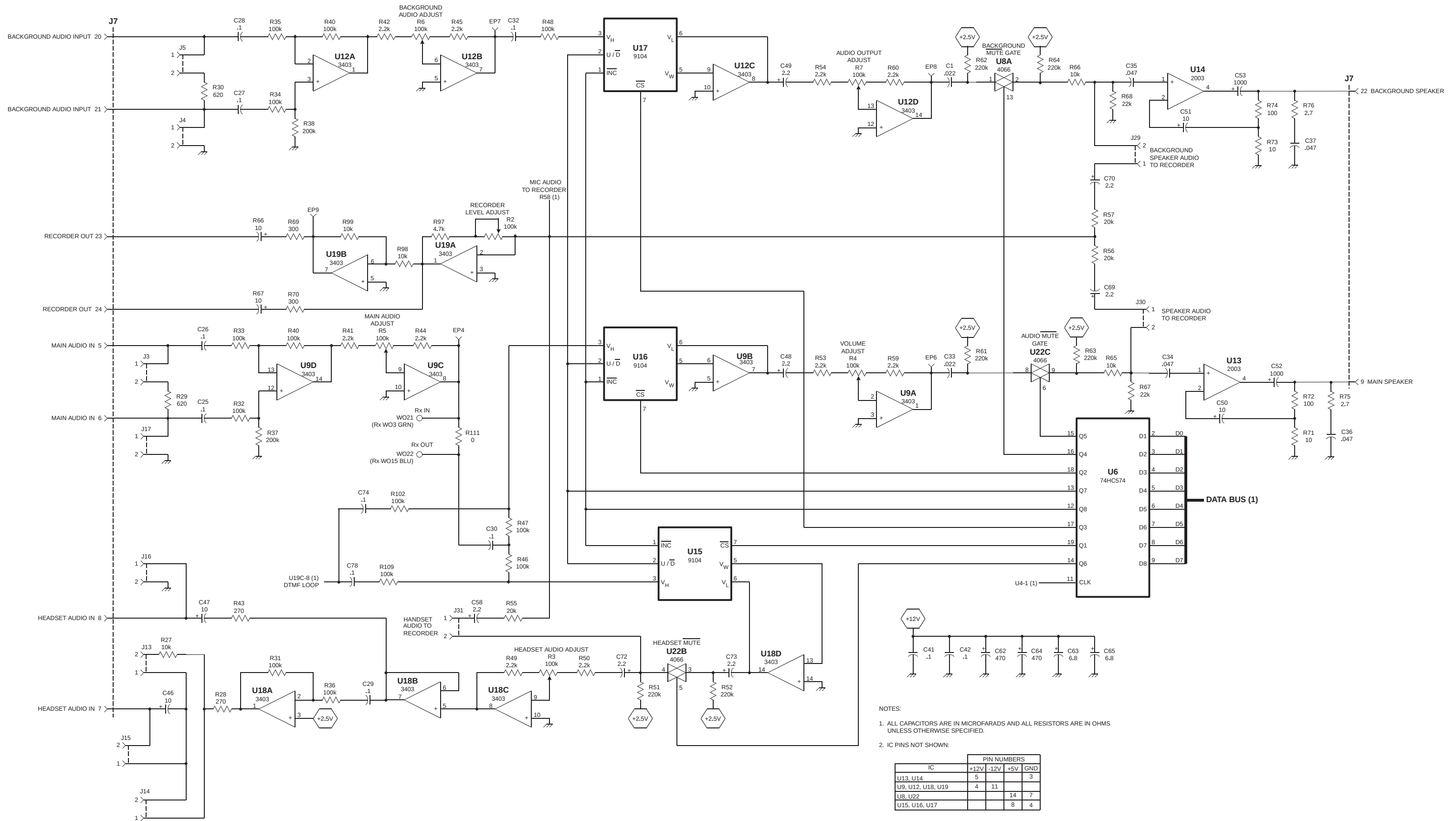
COMPONENT SIDE VIEW  
FIGURE 8-5

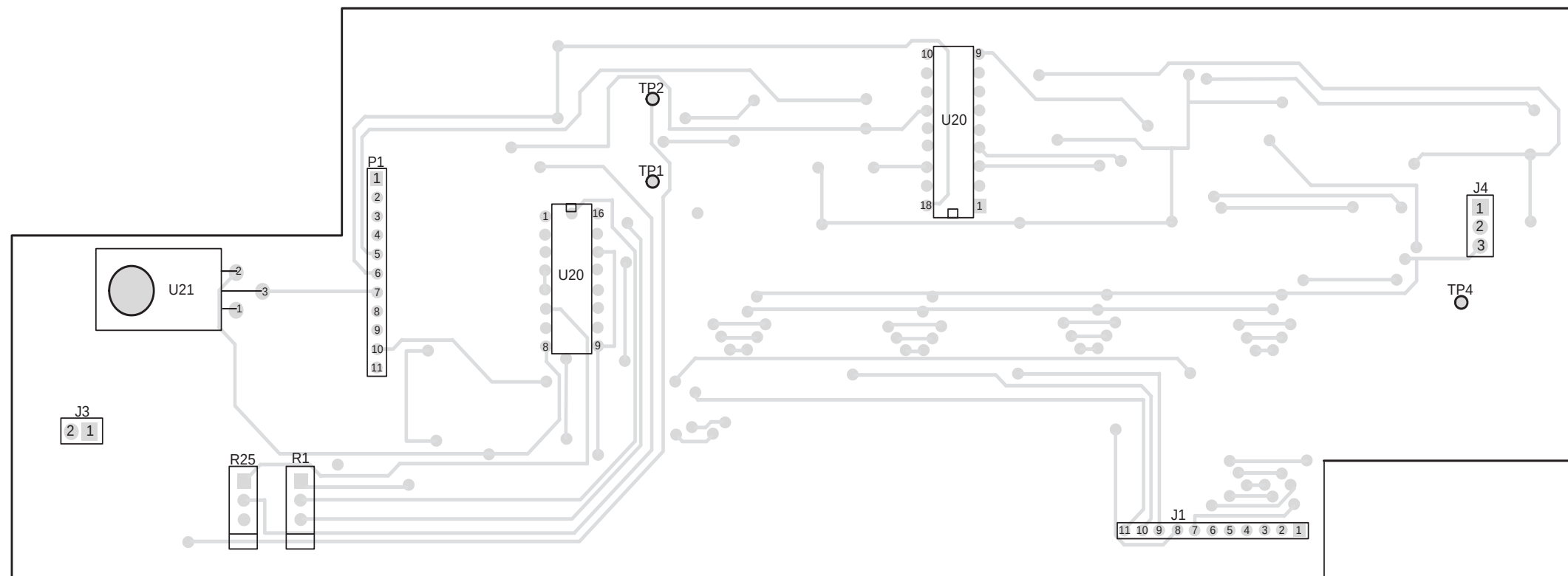


OPPOSITE COMPONENT SIDE VIEW  
FIGURE 8-6

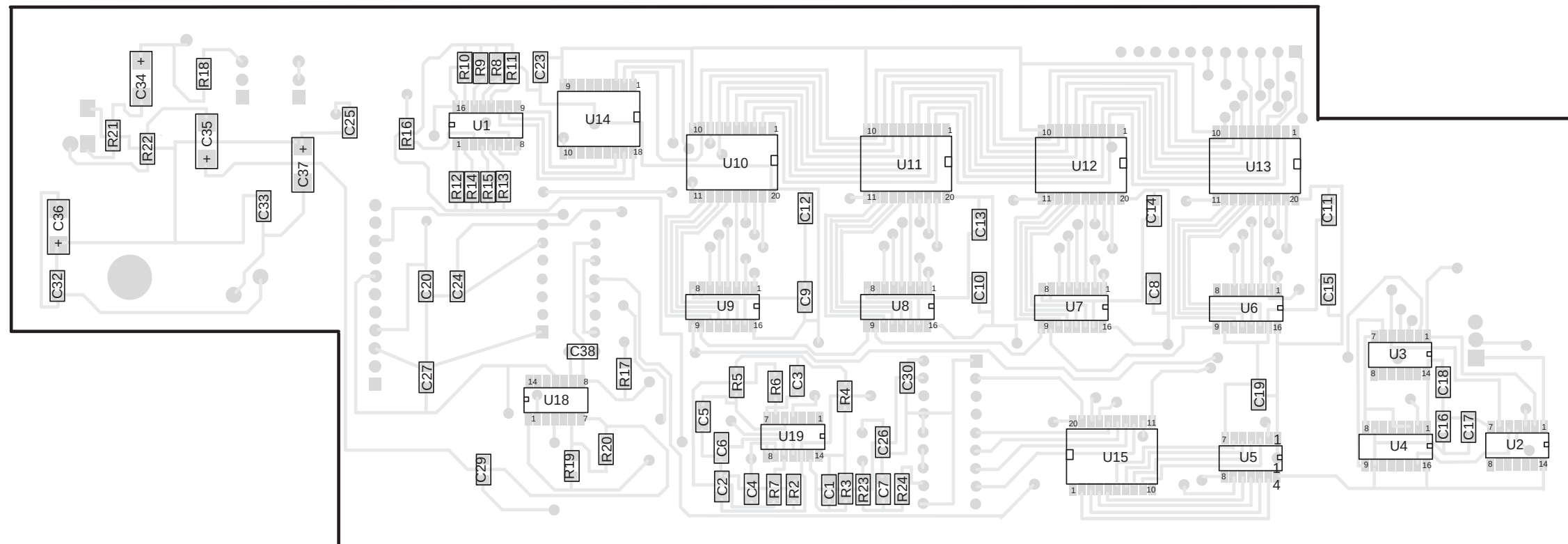


IDC SCHEMATIC (1 OF 2)  
FIGURE 8-7

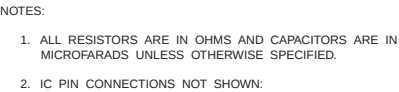




PCM SUMMATION BOARD COMPONENT LAYOUT (COMPONENT SIDE VIEW)  
FIGURE 8-9

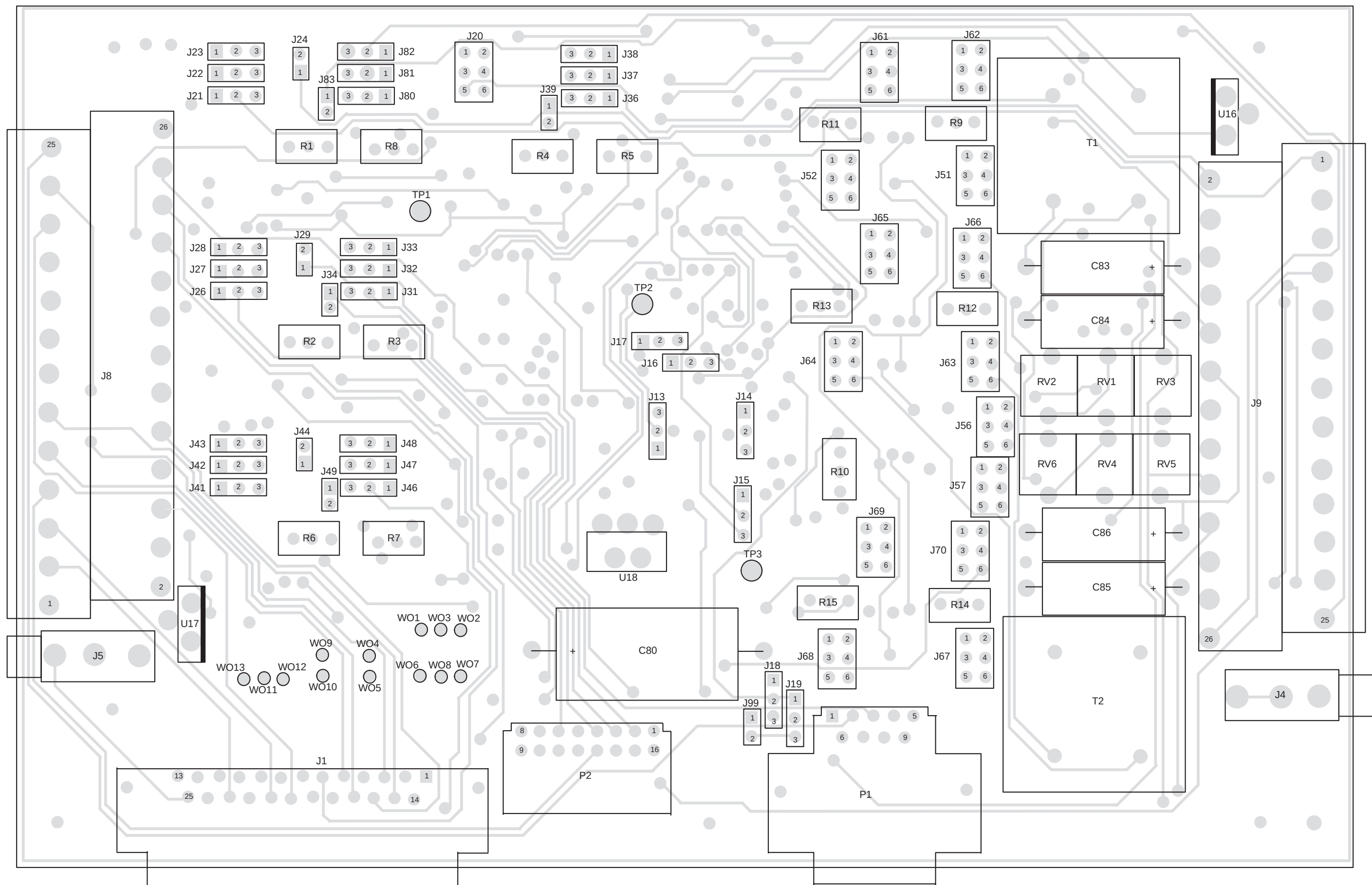


PCM SUMMATION BOARD COMPONENT LAYOUT (OPPOSITE COMPONENT SIDE VIEW)  
FIGURE 8-10



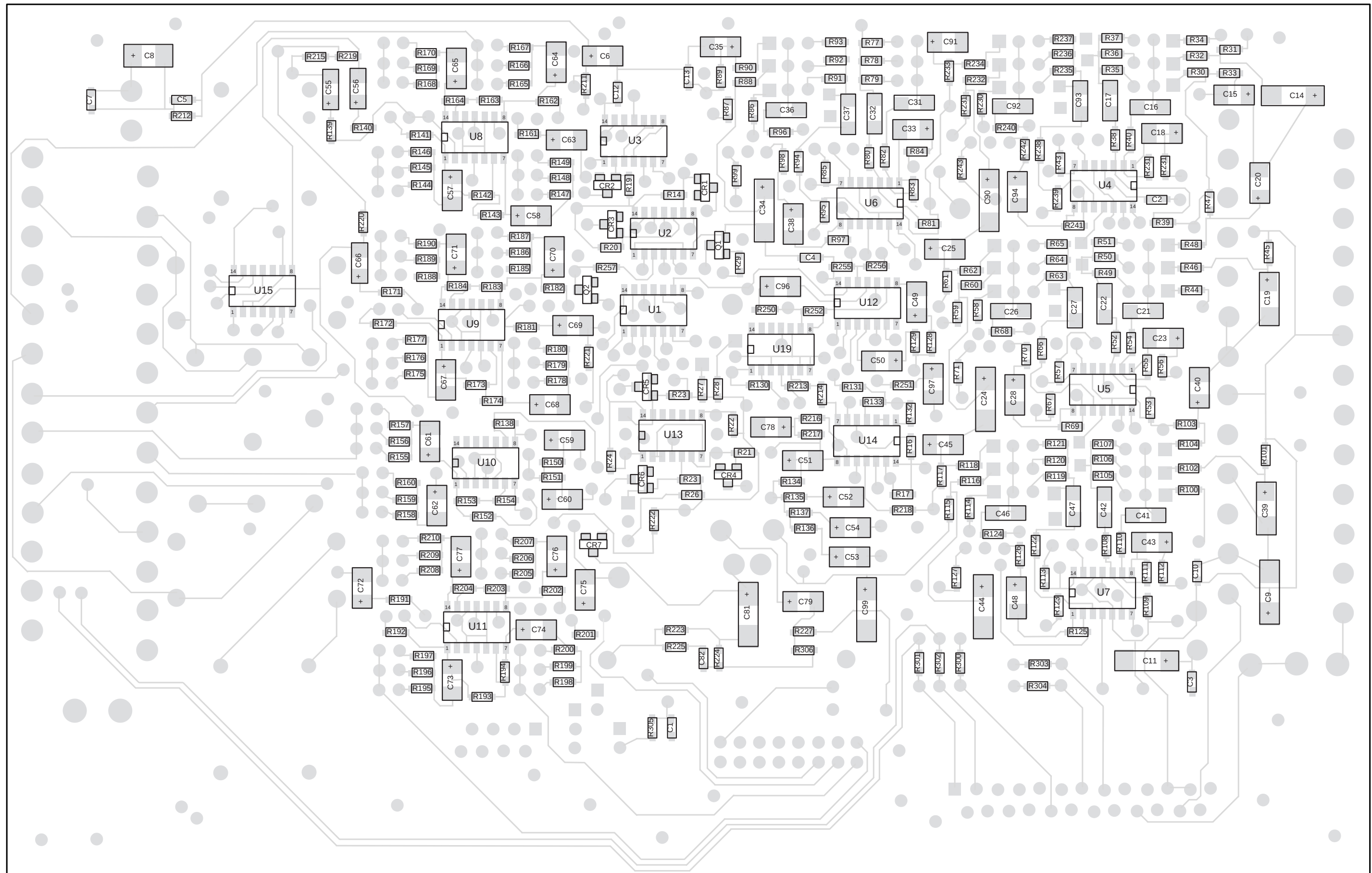
|                                         | PIN NUMBER |     |
|-----------------------------------------|------------|-----|
| IC                                      | +5V        | GND |
| U2, U3                                  | 14         | 7   |
| U4, U5, U6, U7, U8, U9<br>U15, U16, U20 | 16         | 8   |
| U10, U11, U12, U13, U14                 | 20         | 10  |
| U18                                     | 4          | 11  |
| U19                                     | 8          | 16  |



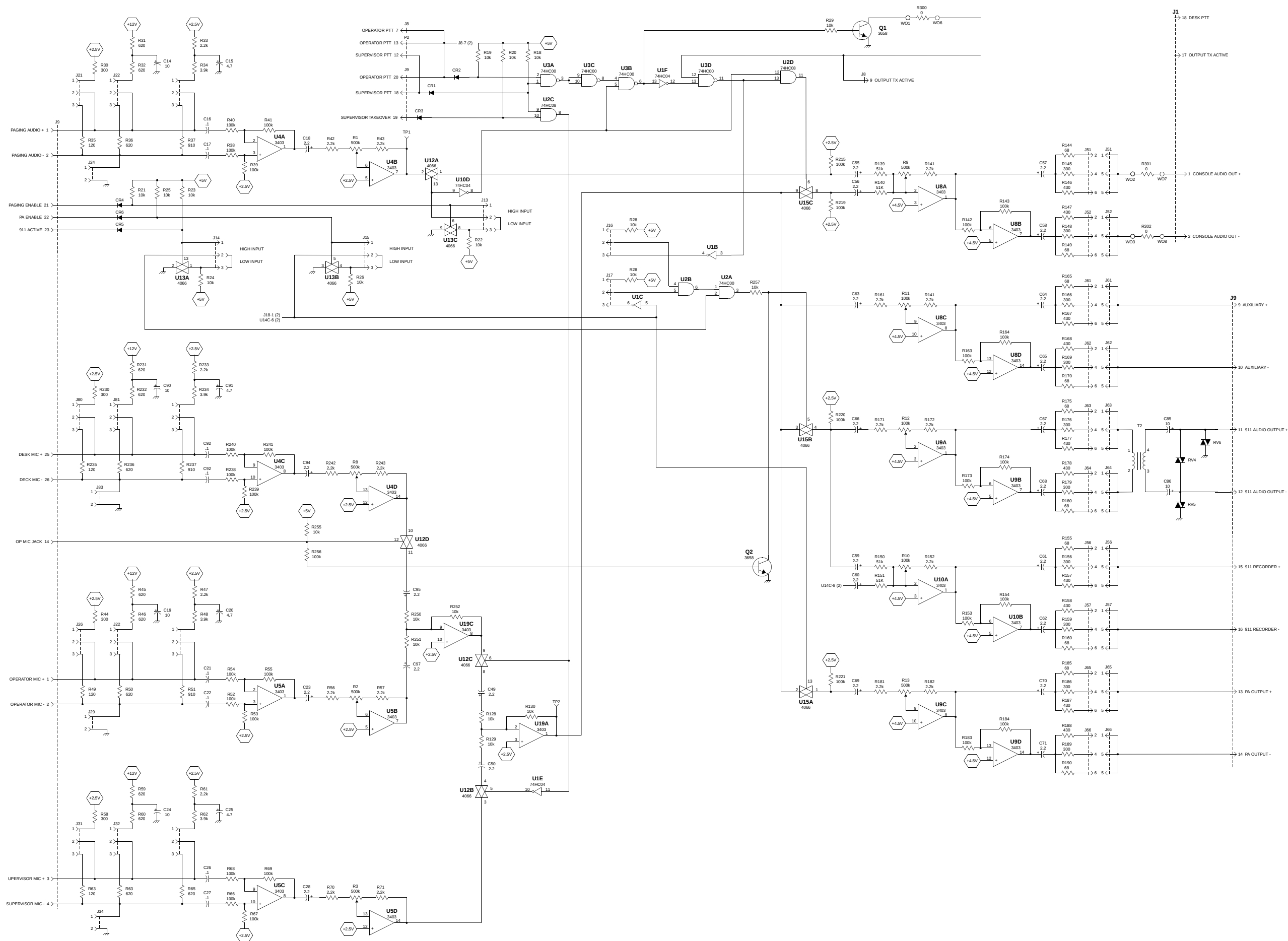


**911 INTERFACE COMPONENT LAYOUT  
(COMPONENT SIDE VIEW)  
FIGURE 8-12**



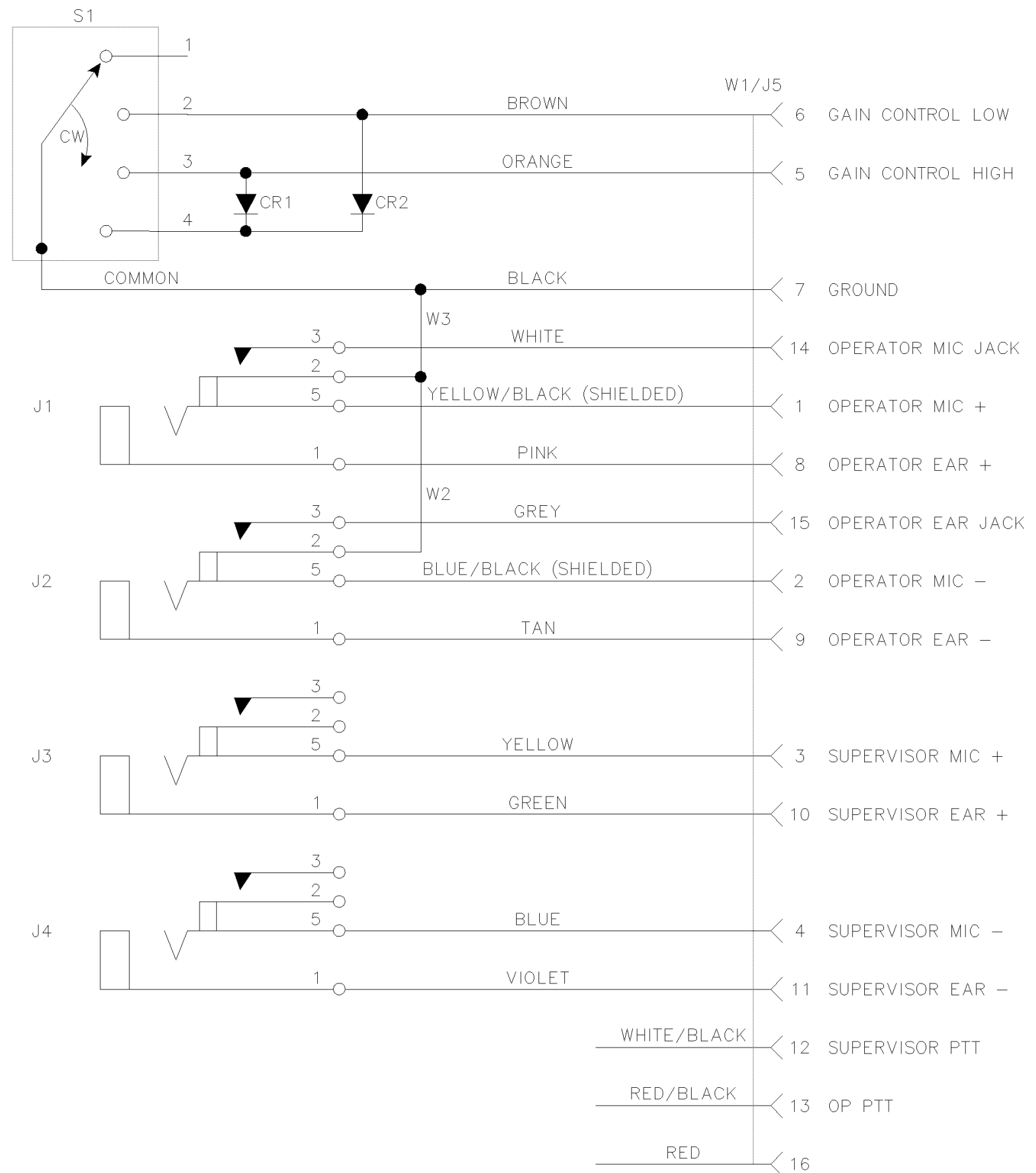
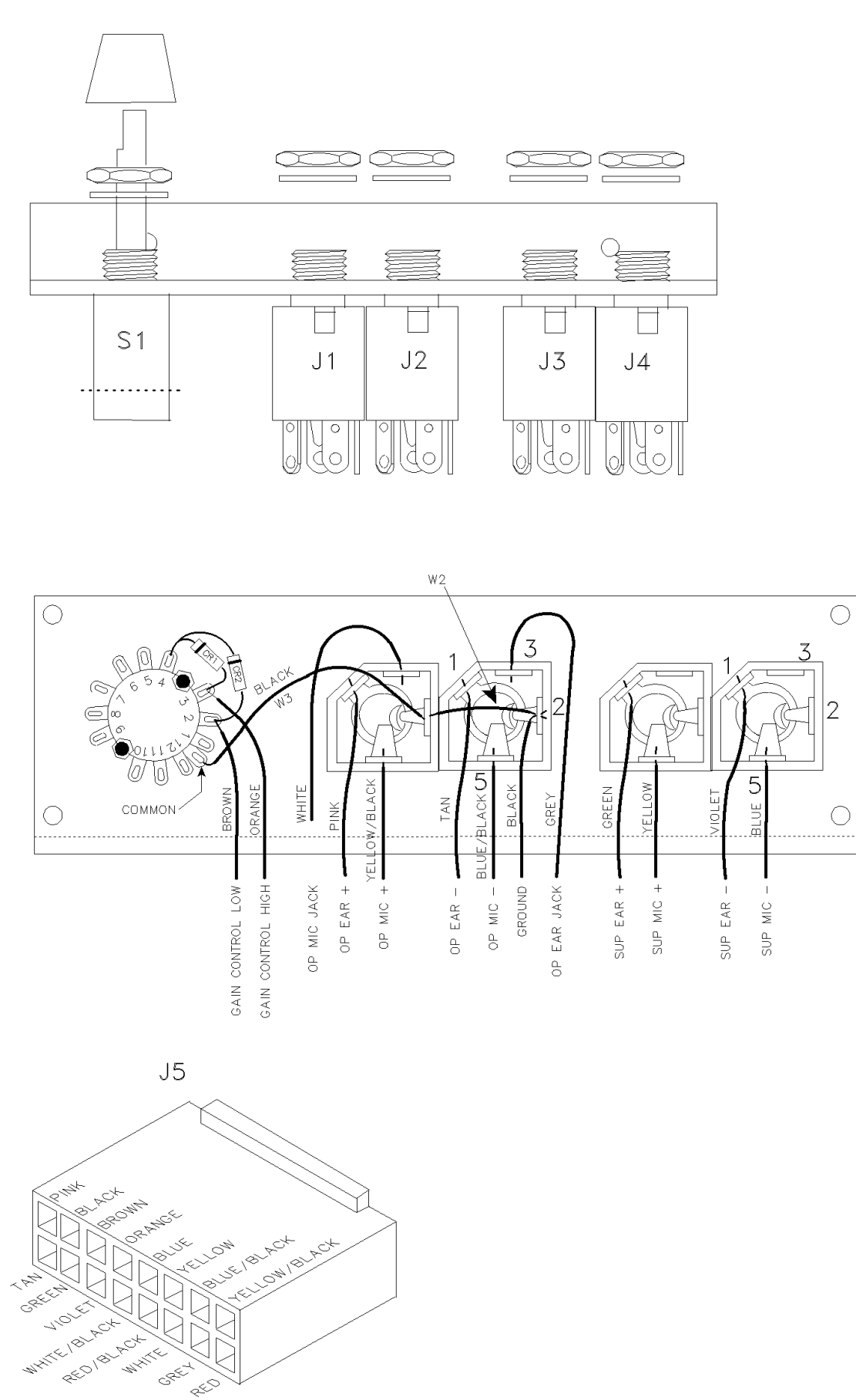


911 INTERFACE COMPONENT LAYOUT  
(OPPOSITE COMPONENT SIDE VIEW)  
FIGURE 8-13



911 INTERFACE SCHEMATIC (1 OF 2)  
 FIGURE 8-12  
 8-12





**911 INTERFACE JACK BOX  
FIGURE 8-17**

## APPENDIX A CUSTOM TO STANDARD KEYBOARD CROSS REFERENCE

| Definition           | Custom Keyboard | Standard Keyboard |
|----------------------|-----------------|-------------------|
| Emergency Queue      | ICON Key        | Shift F1          |
| All Call             | EMR Q           | Shift F2          |
| Simul Select         | ALLCL           | Shift F3          |
| Unique ID Queue      | SIMLS           | Shift F4          |
| Unique ID Directory  | UID Q           | Shift F5          |
| All Mute             | UID D           | Shift F6          |
| Hold Queue           | AMUTE           | Shift F7          |
| Group Directory      | HLD Q           | Shift F8          |
| Single Mute          | GRP D           | Shift F9          |
| Clear Queue          | SMUTE           | Shift F10         |
| Toggle Queue         | CLR Q           | Shift F11         |
| Patch                | TOG Q           | Shift F12         |
| Toggle Menu          | PATCH           | CTRL F1           |
| Last Receive Calls   | TOG M           | CTRL F2           |
| Enter Key            | L REC           | CTRL F3           |
|                      | ENTER           |                   |
| Select Call Block 1  | Call Block 1    | CTRL F4           |
| Select Call Block 2  | Call Block 2    | CTRL F5           |
| Select Call Block 3  | Call Block 3    | CTRL F6           |
| Select Call Block 4  | Call Block 4    | CTRL F7           |
| Select Call Block 5  | Call Block 5    | CTRL F8           |
| Select Call Block 6  | Call Block 6    | CTRL F9           |
| Select Call Block 7  | Call Block 7    | CTRL F10          |
| Select Call Block 8  | Call Block 8    | CTRL F11          |
| Select Call Block 9  | Call Block 9    | CTRL F12          |
| Select Call Block 10 | Call Block 10   | ALT F1            |
| Select Call Block 11 | Call Block 11   | ALT F2            |
| Select Call Block 12 | Call Block 12   | ALT F3            |
| Select Call Block 13 | Call Block 13   | ALT F4            |
| Select Call Block 14 | Call Block 14   | ALT F5            |
| Select Call Block 15 | Call Block 15   | ALT F6            |
| Select Call Block 16 | Call Block 16   | ALT F7            |

# CUSTOM TO STANDARD KEYBOARD CROSS REFERENCE

| Definition                 | Custom Keyboard        | Standard Keyboard  |
|----------------------------|------------------------|--------------------|
| Call Block 1 Instant XMIT  | XMIT SEC Call Block 1  | Hold Down<br>ALT A |
| Call Block 2 Instant XMIT  | XMIT SEC Call Block 2  | ALT B              |
| Call Block 3 Instant XMIT  | XMIT SEC Call Block 3  | ALT C              |
| Call Block 4 Instant XMIT  | XMIT SEC Call Block 4  | ALT D              |
| Call Block 5 Instant XMIT  | XMIT SEC Call Block 5  | ALT E              |
| Call Block 6 Instant XMIT  | XMIT SEC Call Block 6  | ALT F              |
| Call Block 7 Instant XMIT  | XMIT SEC Call Block 7  | ALT G              |
| Call Block 8 Instant XMIT  | XMIT SEC Call Block 8  | ALT H              |
| Call Block 9 Instant XMIT  | XMIT SEC Call Block 9  | ALT I              |
| Call Block 10 Instant XMIT | XMIT SEC Call Block 10 | ALT J              |
| Call Block 11 Instant XMIT | XMIT SEC Call Block 11 | ALT K              |
| Call Block 12 Instant XMIT | XMIT SEC Call Block 12 | ALT L              |
| Call Block 13 Instant XMIT | XMIT SEC Call Block 13 | ALT M              |
| Call Block 14 Instant XMIT | XMIT SEC Call Block 14 | ALT N              |
| Call Block 15 Instant XMIT | XMIT SEC Call Block 15 | ALT O              |
| Call Block 16 Instant XMIT | XMIT SEC Call Block 16 | ALT P              |
| Relay 1 Control            | CTRL 1                 | F1                 |
| Relay 2 Control            | CTRL 2                 | F2                 |
| Relay 3 Control            | CTRL 3                 | F3                 |
| Relay 4 Control            | CTRL 4                 | F4                 |
| Relay 5 Control            | CTRL 5                 | F5                 |
| Relay 6 Control            | CTRL 6                 | F6                 |
| Relay 7 Control            | CTRL 7                 | F7                 |
| Relay 8 Control            | CTRL 8                 | F8                 |
| File Control Key           | LOAD/SAVE/FILE         | F9                 |
| I/O Mnemonic's Toggle      | CTRL #                 | F10                |
| Color Menu                 | COLOR                  | F11                |
| Audio Control              | AUDIO Key              | F12                |
| Toggle Alarm Window        | CTRL 0                 | ALT R              |
| Reset Alarm 1              | SHIFT 1                | ALT S              |
| Reset Alarm 2              | SHIFT 2                | ALT T              |
| Reset Alarm 3              | SHIFT 3                | ALT U              |
| Reset Alarm 4              | SHIFT 4                | ALT V              |
| Reset Alarm 5              | SHIFT 5                | ALT W              |
| Reset Alarm 6              | SHIFT 6                | ALT X              |
| Reset Alarm 7              | SHIFT 7                | ALT Y              |
| Reset Alarm 8              | SHIFT 8                | ALT Z              |