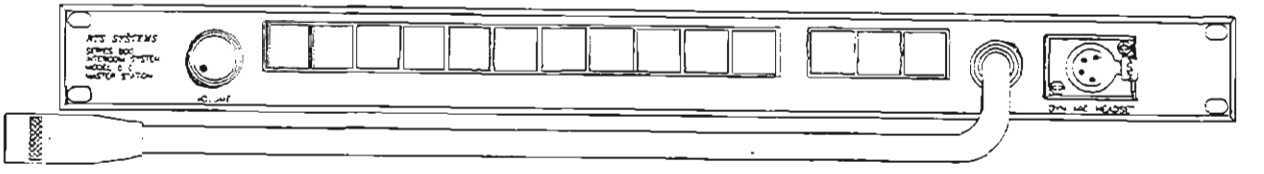
SERVICE MANUAL

MODEL 810B

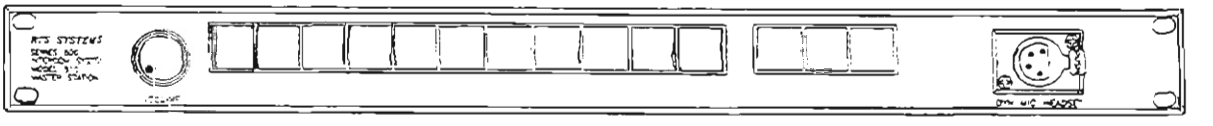
Master Station

Series 800

With Panel Microphone



Without Panel Microphone



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This equipment contains and uses a design embodied in United States Patent No. 4,358,644: "A Bilateral Current Source for a Multi-terminal Intercom". This design employs a two-wire to four-wire converter.

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The Center at Burbank Airport
2550 Hollywood Way, Suite 207
Burbank, CA 91505 U.S.A.
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Fax: (818) 843-7953

RETURN SHIPPING INSTRUCTIONS

PROCEDURE FOR RETURNS

If a repair is necessary, contact the dealer where this unit was purchased.

If repair through the dealer is not possible, obtain a RETURN AUTHORIZATION from:

Customer Service Department
Telex Communications, Inc.
Telephone: (800) 828-6107
Fax: (800) 323-0498

DO NOT RETURN ANY EQUIPMENT DIRECTLY TO THE FACTORY WITHOUT FIRST OBTAINING A RETURN AUTHORIZATION.

Be prepared to provide the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

SHIPPING TO MANUFACTURER FOR REPAIR OR ADJUSTMENT

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Customer Service Department
Telex Communications, Incorporated
West 1st Street
Blue Earth, MN 56013 U.S.A.

Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper collect.

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SECTION 1: INTRODUCTION AND SPECIFICATIONS

1.1 Introduction

The Model 810B Master Station is a multi-purpose intercom station designed for use in professional applications. The Model 810B can be factory-configured in four different modes of operation to satisfy a wide variety of intercommunication requirements.

The Model 810B is compatible with other RTS Series 800 products. All intercom lines are balanced line-level, and operate in a full-duplex (both talk and listen) mode. The Model 810B interconnects to TW Intercom circuits through additional equipment.

The Model 810B allows voice communication from any one of up to ten user stations to any one, or combination of, nine other user stations. It is often referred to as a "squawk system" or an "all master system".

The Model 810B may be used as a completely self-contained communications system or an addition to a conference-line intercom system, providing point-to-point communications independent of the conference-line buses.

1.2 Description

The Model 810B fits into a single 19" rack space. All operational controls are mounted on the front panel for easy access. The optional 20 inch gooseneck microphone can be coiled for close operating conditions or extended towards the user. Adding an external loudspeaker allows for an open listening condition when operating in conjunction with the gooseneck microphone. For private communication, a dynamic microphone headset can be plugged into a front panel connector.

1.3 Operational Controls

Three latching pushbutton switches control the operations of the Model 810B: The PANEL MIC switch selects the gooseneck microphone or the headset microphone.

The MIC ON switch activates the microphone preamplifier circuit regardless of which microphone is being used. The SPKR ON switch turns on any user-supplied external loudspeaker.

A limited range volume control provides a minimum speaker/headphone volume to ensure that the operator can hear all incoming messages.

1.4 Selection Controls

The selection switches in the Model 810B are a group of eleven pushbuttons. The first ten pushbuttons directly access the intercom lines and can be latching or momentary-action. The eleventh pushbutton is a momentary-action ALL TALK pushbutton which allows any station to talk to all intercom lines at once.

All front-panel pushbuttons have two levels of illumination; an activated button has a higher brightness.

1.5 System Configurations

The Model 810B can be ordered in four versions to accommodate specific operational requirements in a variety of system arrangements. The ten selection pushbuttons take on different functions in each version of the Model 810B. Special versions may be designed as required. Contact the factory.

Squawk System

The Model 810B can be used as a 10 x 10 point-to-point squawk system. Any one of ten Model 810B User Stations can talk to any other station or combination of stations. Communication is dedicated to each respective station and the receiving station will automatically hear all incoming messages.

There is one momentary pushbutton for each station.
A station can talk to any number of stations simultaneously by pressing any combination of buttons. Pressing the ALL TALK button addresses all stations at the same time.
A standard 10 x 10 system can be expanded by increasing the number of stations in a "string" configuration. Each group of stations on a string shares the same receive address and each station on the string can talk to any other station in the system.

When the Model 865 Central Matrix is used with the squawk system, it adds a call tally feature to the configuration, telling a user visually which station is calling. The Model 865 provides line termination via a termination plug.

Alternate Action Matrix System

The Model 810B-AA can be used as a user station within a 10 x 10 matrix intercom system. Any one of ten stations can talk to any other station or combination of stations. All ten pushbuttons are latching action for maintained and dedicated communications to other stations. The receiving station will automatically hear all incoming messages.

The ALL TALK pushbutton is momentary action and can page all stations simultaneously.

Each latching-action pushbutton illuminates when engaged, indicating switch status (on or off).

Tally identification is not used in the matrix system so the Model 865 Central Matrix is not necessary. The Model 810B stations can be interconnected using a Model 4025A Splitter. Line termination must be provided by a system termination plug. This termination can be ordered from RTS Systems or made by the user (see Figure 3-2D).

Ten Channel Conference Line System

The Model 810B-CL can be used as a user station within a 10-Channel conference line intercom system. All pushbuttons are latching action to allow continuous communication on any channel or combination of channels. The call tally feature is not used in this configuration.

The 810B-CL can be used in a variety of ways within conference line systems. One example of an arrangement consists of a single 810B-CL coupled with ten TW intercom User Stations. The Model 4012 System Interconnect is normally used for this purpose. The Model 4012 provides interconnection between the 810B-CL and the TW Intercom User Stations. The Model 4012 also provides line termination for the 810B-CL. This arrangement allows the 810B-CL to talk directly with each TW station on channel 2 and all TW stations can talk to each other on channel 1.

Variations on system arrangements can easily be made by reconfiguring and/or adding equipment. Consult the factory for more information.

Five Channel Conference Line System

The Model 810B-5CTL can be used within a 5-channel conference line intercom system. All pushbuttons are latching action to allow continuous communication on any channel or combination of channels. Each channel has separate talk and listen pushbuttons; this allows any combination of talking and listening to selected channels. The call tally feature is not used in this configuration.

Contact the factory for system arrangement.

1.6 Connections, Inputs & Outputs

Interconnection to the 810B is accomplished by using standard 50-pin microribbon connectors. A rear panel multi-pin "D" connector provides access to various circuit ports. These various circuit ports can be used to couple the 810B to other intercom equipment or to externally control some of the 810B functions.

1.7 MODEL 810B SPECIFICATIONS

General	
Required Audio Line Impedance:	200 ohms or (Selectable) 800 ohms
Line Input Impedance:	10,000 ohms
Intercom Audio Level Output: Nominal:	at 200 ohm line impedance/ 2 volts peak-to-peak at 800 ohm line impedance/4 volts peak-to-peak
Average Speech Level Range:	-15 dBu to 10 dBu
Absolute Maximum Speech Level:	3 volts, peak (linear limit)
Operating Distance:	10,000 ft., balanced pair cable (800 ohm line impedance) #22 gauge wire
Conference-Line Operation	
(CL/5CTL Options)	
User Station:	10,000 ohms, nominal
Bridging Impedance:	100 Hz to 20 KHz
Current Source	
Transfer Ratio Output: Nominal:	5 milliamperes/1.5 volts, 5 milliamperes into 200 ohms = 1 volt peak
Microphone Preamplifier	
Input Impedance:	470 ohms
Source Impedance:	200 ohms, nominal
Maximum Input Level:	150 millivolts
Voltage Gain:	54 dB
Limiter Range:	34 dB
Frequency Response:	100 Hz to 10 KHz, 3 dB
Headset Mic Output Range:	12 to 123 millivolts peak-to-peak
Headset Microphone Source Impedance Range:	100 to 1000 ohms (200 ohms is recommended)
Headphone Amplifier	
Overall Voltage Gain:	24 dB
Into 25 ohm load:	9 volts peak-to-peak
Output Power:	0.3 watts, into 25 ohms
Frequency Response:	150 Hz to 8 KHz, 3 dB
Headphone Impedance Range:	25 to 600 ohms
Loudspeaker Amplifier	
Overall Voltage Gain:	24 dB
Frequency Response	150 Hz to 8 KHz, 3 dB
Output Power:	
Into 4 ohm Loudspeaker:	4 watts
Into 8 ohm Loudspeaker:	2 watts
Loudspeaker Impedance Range:	4 to 16 ohms
Power and Mechanical	
Power Requirements:	14 volts AC at 1.6 amperes (AC adapter provided)
Dimensions:	1.75" H x 19" W x 13.5"D 45 mm H x 483 mm W x 343 mm D
Weight:	6.5 pounds, 2.93 kilograms
Finish:	
Front Panel:	Enamel Paint, light grey
Rear Housing:	Gold Iridite

1.8. MODEL 865 SPECIFICATIONS

This unit is completely passive, containing only connectors and a circuit board for cross connect tally matrixing between Model 810B Master Stations when used in a squawk system arrangement. All audio signals from station to station are bussed from connector to connector. A 10-channel 200 or 800 ohm terminating plug is supplied to establish the proper line impedance as required in the system.

Dimensions:	3.5"H x 19"W x 13.5"D 89 mm H x 483 mm W x 343 mm D
Weight:	7.6 pounds, 3.42 kilograms
Finish:	
Front Panel:	Enamel Paint, light gray
Rear Housing:	Gold Iridite

Specification Notes:

0 dBu = 0.775 volts, r.m.s.
0 dBm = 1 milliwatt
0.775 volts r.m.s. into 600 ohm load (0 dBu, open circuit)
0.387 volts r.m.s. into 150 ohm load (-6 dBu, open circuit)

Notice: All product information and specifications are subject to change without notice.

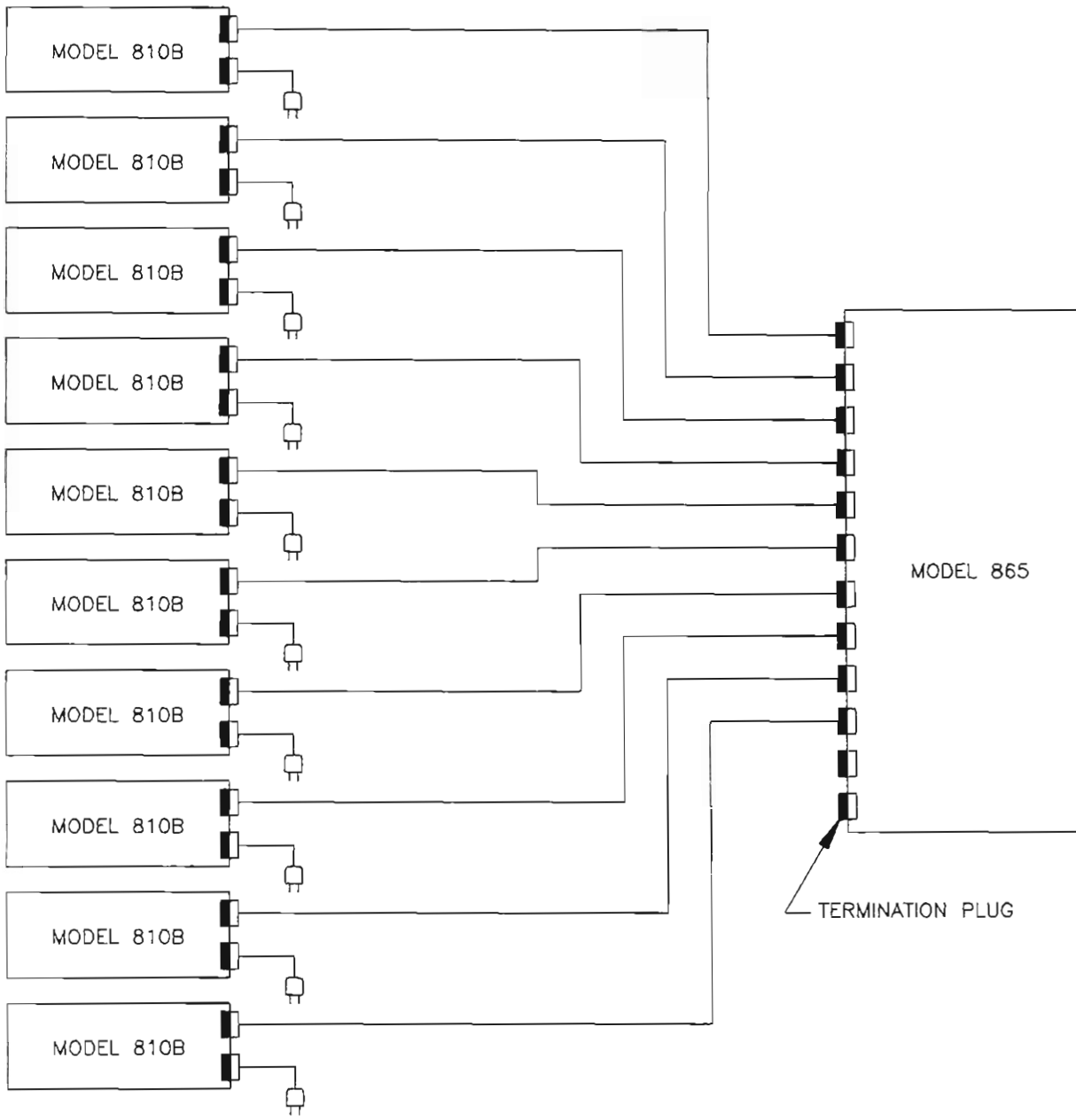


Figure 1-1
Typical Model 810B Set-Up

SECTION 2: INSTALLATION

This section is divided into three parts: Installation, Configurations and Features. The Installation section applies to all Model 810B's, regardless of the system configuration. A standard Model 810B is factory-set in the Squawk configuration.

The Configurations section details a set-up for each of the Model 810B system configurations. The Features section explains how to use each of the various features of the Model 810B.

2.1 Mechanical

The Model 810B is enclosed within a metal case designed to fit in an EIA standard 19" equipment rack and occupy one rack unit of space. Securely fasten the unit to the rack, allowing plenty of room in the back for cable connections.

2.2 POWER

The 810B requires 14 volts AC or 18 volts DC. A wall mounted power module with an output of 14 volts AC at 1.6 amperes is shipped with each unit. An external supply or transformer capable of supplying this power may also be used. Attach the output of the AC supply to pins 2 and 3 of J101 on the rear panel. (See Figure 3-2, Outline Drawing Rear Panel.) If a DC supply is used, connect the positive side of the supply to pin 2 and the negative side of the supply to pin 4 of J101.

2.2.1 Wire and Cable Considerations

The Model 810B is connected to other units within a system using 50-conductor, (25-pair) cables, similar to those used by the telephone company. The cables may be up to 10,000 feet long. These cables are available from RTS Systems; refer to Model 4015-XX (-XX refers to cable length and type) in flat ribbon cable or round twisted pair cable (stranded).

2.2.2 System Termination

All of the Model 810B configurations require that the channels be terminated in order to establish the correct 200 ohm line impedance. This is normally accomplished with a 200 ohm system termination plug, RTS Systems part number 9020-2919-00. See Figure 2-6A.

The standard line impedance for the Model 810B Intercommunication System is 200 Ohms. When exceptionally long cable runs are used, or when an 800 ohm line impedance is desired, an 820 ohm termination plug is used. This part may be ordered directly from RTS Systems. The part number is 9020-2919-01.

Carefully check the installation section on each configuration to determine the termination plug requirements and location. Follow the instructions carefully to avoid any termination problems. NOTE: If using a Model 4012 in the system, a termination plug is not needed since the 4012 provides termination as well as interconnection.

SECTION 3: OPERATING INSTRUCTIONS

3.1 Configurations & System Comparisons

The Model 810B is a versatile communications device which can be set up in many different configurations. This section shows the three most popular systems and explores some alternative configurations.

Chart 3-1
Model 810B Configurations/System Comparisons

	Conference	Squawk (Point-to-point)	Matrix (Point-to-point)
Push Button Type	Alternate Action	Momentary	Alternate Action
Tally Action	Self	Identifies Caller on Called Station	Self
Model 865 Required?	No	Yes	No
Communications Sustained/Momentary	Sustained	Momentary	Sustained
2 Wire or 4 Wire	2	4	4
Typical Number of Stations	up to 50	1	1 to 10
Maximum Number of Stations	75	10	25

3.1.1 Sidetone Adjustments

When a station is reconfigured for other channels or there is a major change in the system, the sidetone will need to be adjusted for a proper null. This is required to prevent feedback from occurring when the ALL TALK button is pressed or the station's own address button is pressed. The sidetone pots are located inside the Model 810B.

To make the adjustments, remove the two screws from the top cover and slide the cover to the rear. The unit must be plugged into the system for proper sidetone adjustment. Press the button corresponding to your own station position which should be indicated by a colored switch insert. With the MIC and SPEAKER switches on, speak or blow (pink noise simulation) into the microphone; adjust the sidetone pot of your own channel until a null is established (minimum sound). See Figure 3-1A. Release the button. Press the ALL TALK button. With the speaker volume turned up, verify that there is no feedback. If there is, re-adjust the sidetone until there is little or no feedback.

3.1.2 Level Adjustments

These adjustments are available to compensate for interchannel level differences.

3.1.3 Channel Output Signal Level

The line level signal or the output of each bilateral current source is typically 2 volts peak to peak into 200 Ohms.

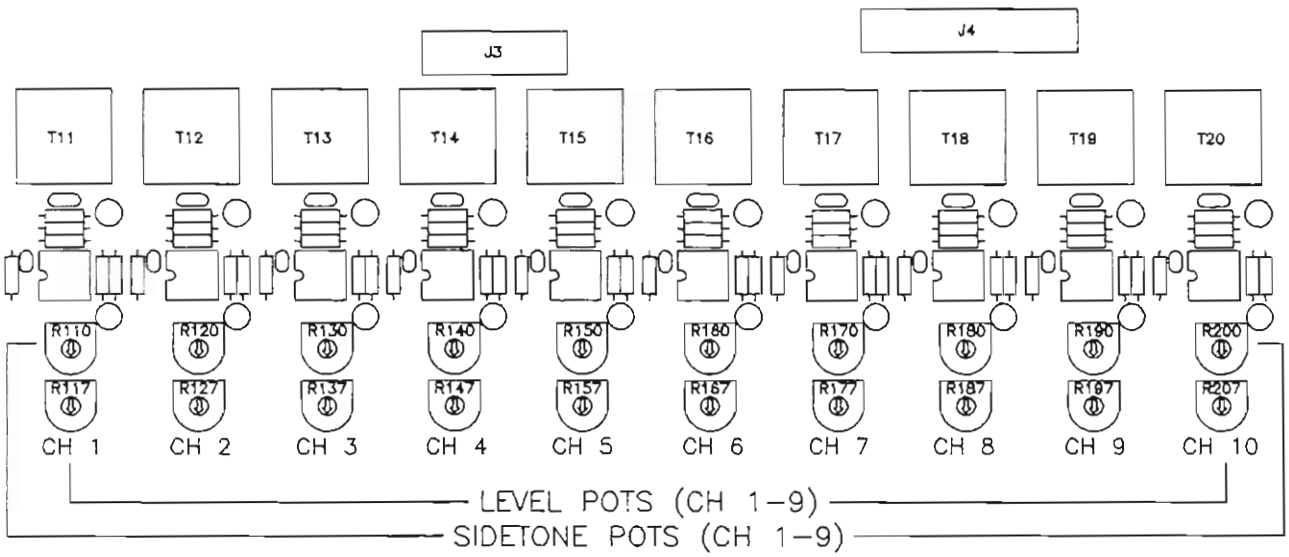


Figure 3-1A
Sidetone & Level Adjustments

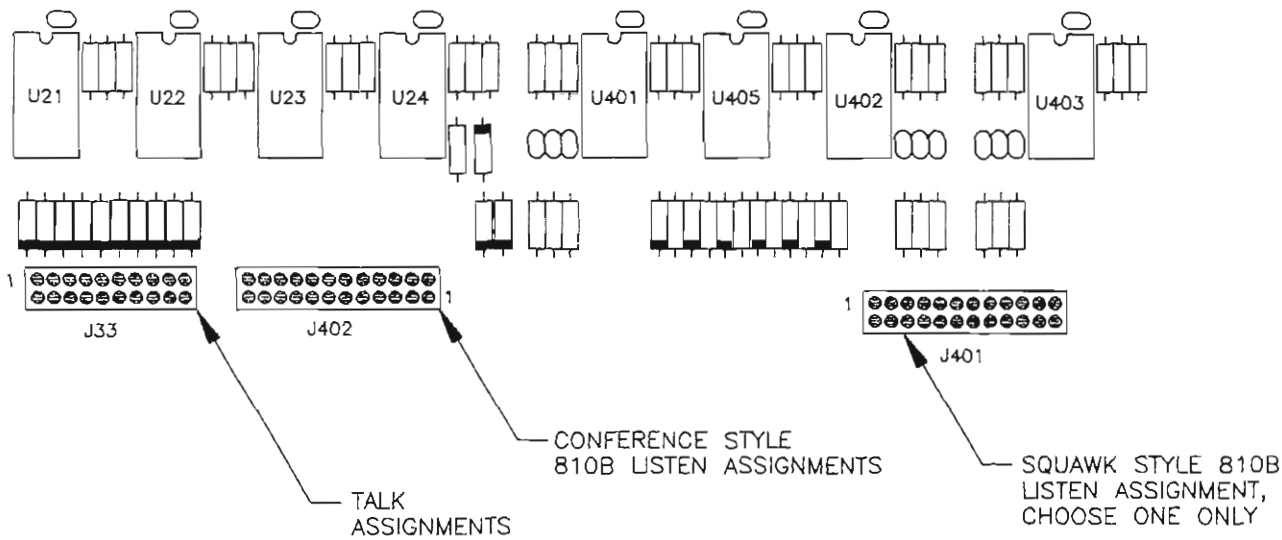


Figure 3-1B
Talk & Listen Assignments

Assign squawk listen address by adding one Berg #65474-001 (RTS #2007-0042-00) jumper in one of the following positions:

Between J401 pins:	Squawk/Permanent Listen Assign, Ch #:
1 and 2	1
3 and 4	2
5 and 6	3
7 and 8	4
9 and 10	5
11 and 12	6
13 and 14	7
15 and 16	8
17 and 18	9
19 and 20	10

Add an amber film insert to the switch button that corresponds to the selected squwak address.

Figure 3-2A
Squawk Receive Channel Selection

3.2 Squawk Style Systems

3.2.1 Receive Channel Selection

Each Squawk Model 810B is factory set to receive one particular channel. This, however, may not be the channel assignment that is required. Choose only one channel per 810B. The channel that each station listens from is determined by a jumper located in J401 which is inside 810B. To change the channel assignments, move the jumper to the appropriate position. See Figure 3-2A. If with a Model 865 is being used with the system, the 810B must be connected to the same connector on the Model 865 that corresponds to the 810B channel position. Example: 810B selected for position #1 (jumper installed into J401 pins 1 &2) must be connected at connector J101 in 865. J102 for position #2, etc.

3.2.2 Talk Channel Selection

Each Squawk Style Model 810B is factory assigned to talk out on each of the 10 channels. The jumper assignments are made via J33 on the motherboard. See Figure 3-2B.

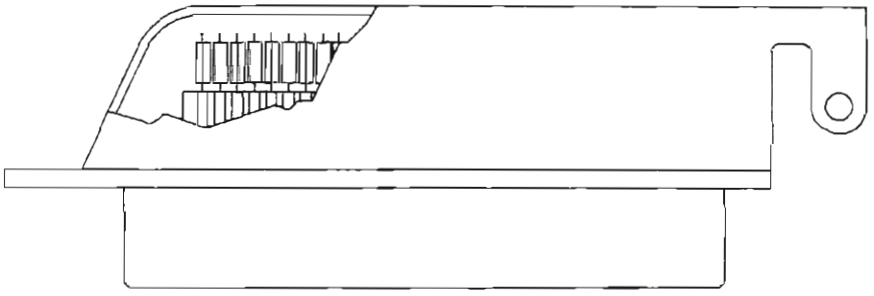
Add Berg #65474-001 (RTS #2007-0042-00) jumpers (10 total) between:

J33 pins:	Switched Talk Assign, Ch #:
1 and 2	1
3 and 4	2
5 and 6	3
7 and 8	4
9 and 10	5
11 and 12	6
13 and 14	7
15 and 16	8
17 and 18	9
19 and 20	10

Figure 3-2B
Squawk Talk Channel Assignment

S1-1: ON (speaker dim enable with the mic switch)
S1-2: OFF (speaker dim enable with the all talk switch)
S1-3: ON (auto speaker on)
S1-4: ON (instant mic on)

Figure 3-2C
Squawk Dip Switch Assignments



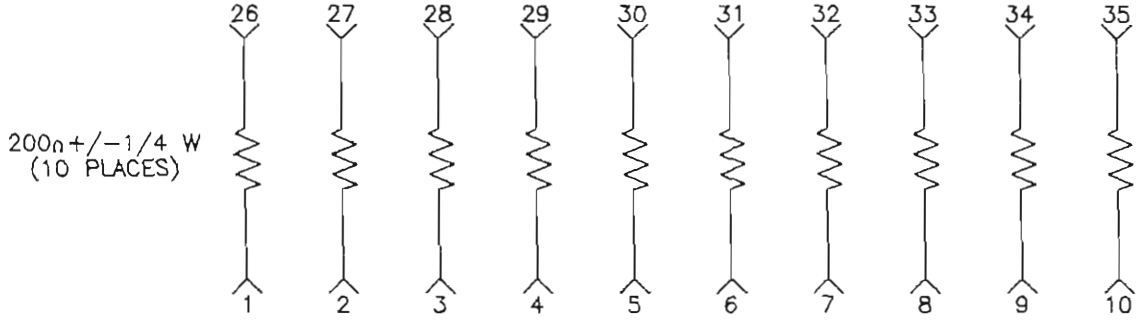


Figure 3-2D
System Termination Plug

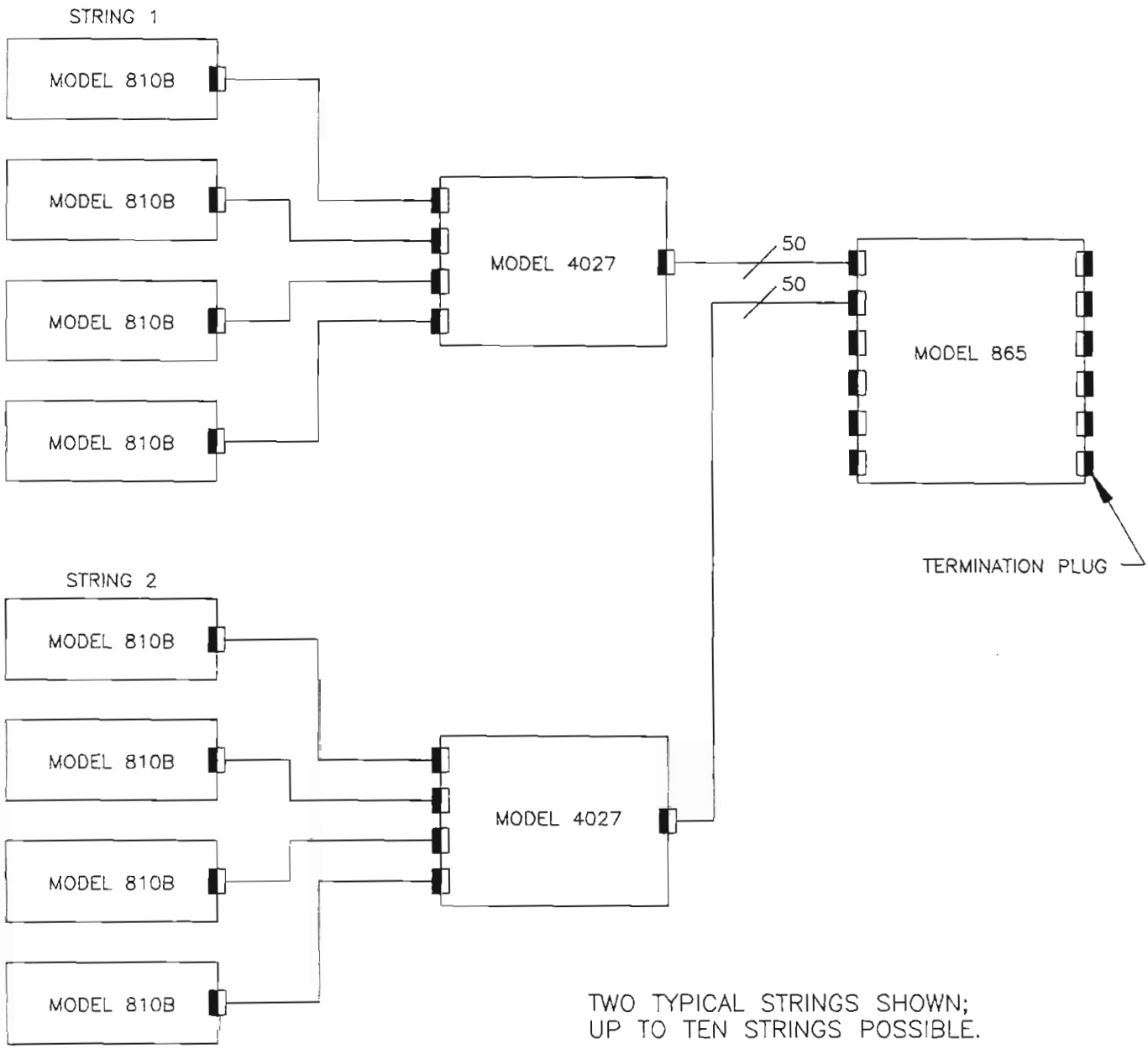


Figure 3-2E
"Stringing" Squawk Style Stations Together

3.2.3 Dip Switch Assignments

In a squawk style 810B, certain logic functions are used. The speaker dim function is active when the MIC ON switch is enabled. The speaker dim pot (R85) is factory set for -15dB. The auto speaker on function is enabled when the 810B receives a call. The instant mic on feature is enabled when the 810B user pushes on a "STA" (or squawk channel) button. See Figure 3-2C.

3.2.4 "Stringing" Squawk Stations Together

To expand the system or for convenience, up to five Model 810B's may be placed on the same channel, creating a "string". Stations can be put on a "string" by using one or more Model 4025A 1x4 splitters. This is shown in Figure 3-2E. All stations on a string must be internally configured for the same channel. This allows stations on the same channel to be across the room. See Section 3.2.1, Receive Channel Selection.

3.2.5 Squawk System Pin Configuration

Pin	Description	Pin	Description
1	CHANNEL 1 AUDIO	26	CHANNEL 1 AUDIO
2	CHANNEL 2 AUDIO	27	CHANNEL 2 AUDIO
3	CHANNEL 3 AUDIO	28	CHANNEL 3 AUDIO
4	CHANNEL 4 AUDIO	29	CHANNEL 4 AUDIO
5	CHANNEL 5 AUDIO	30	CHANNEL 5 AUDIO
6	CHANNEL 6 AUDIO	31	CHANNEL 6 AUDIO
7	CHANNEL 7 AUDIO	32	CHANNEL 7 AUDIO
8	CHANNEL 8 AUDIO	33	CHANNEL 8 AUDIO
9	CHANNEL 9 AUDIO	34	CHANNEL 9 AUDIO
10	CHANNEL 10 AUDIO	35	CHANNEL 10 AUDIO
11	SPACE	36	SPACE
12	SPACE	37	SPACE
13	GROUND	38	GROUND
14	GROUND	39	GROUND
15	GROUND	40	GROUND
16	SWITCH 1 LOGIC	41	SWITCH 2 LOGIC
17	SWITCH 3 LOGIC	42	SWITCH 4 LOGIC
18	SWITCH 5 LOGIC	43	SWITCH 6 LOGIC
19	SWITCH 7 LOGIC	44	SWITCH 8 LOGIC
20	SWITCH 9 LOGIC	45	SWITCH 10 LOGIC
21	LAMP 1 LOGIC	46	LAMP 2 LOGIC
22	LAMP 3 LOGIC	47	LAMP 4 LOGIC
23	LAMP 5 LOGIC	48	LAMP 6 LOGIC
24	LAMP 7 LOGIC	49	LAMP 8 LOGIC
25	LAMP 9 LOGIC	50	LAMP 10 LOGIC

3.3 Conference Style Systems

There are three different types of conference line configurations available: the 810B-CL, the 810B-5CTL, and the 810B-3CTL.

3.3.1 Model 810B-CL

The Model 810B-CL configuration is operated in a conference or "party line" mode. All stations that select the Channel 1 pushbutton will talk and listen together. All stations that select the Channel 2 pushbutton will talk and listen together, and so on. The front-panel channel select buttons control both talk and listen functions. The -CL option provides alternate action switches which stay on when pressed in and turn off when pressed out. Because more than one channel may be selected at a time (without crosstalk), a Model 810B-CL user station can talk and listen to other 810B-CL user stations on up to 10 channels. The block diagram for this system is shown in Figure 3-3A.

3.3.2 Termination

Each conference channel should be terminated with 200 Ohms. The termination requirements for this system are shown in Figure 3-3H. See Figure 3-3E for line pin configuration.

3.3.3 810B-CL Interconnection to TW System

It is possible to interconnect a conference style system with an RTS TW Intercom System. This is shown in Figure 3-3G. A transformer and a DC blocking capacitor is required for each channel. An alternate configuration would be to connect only some of the Model 810B channels to the "TW Intercom" system, leaving the others free for communications between Model 810B stations only. In this case, the channels that are not connected to the TW System must be terminated with a 200 ohm 1/4 watt resistor. Connect this resistor across the balanced audio as shown in Figure 3-3G.

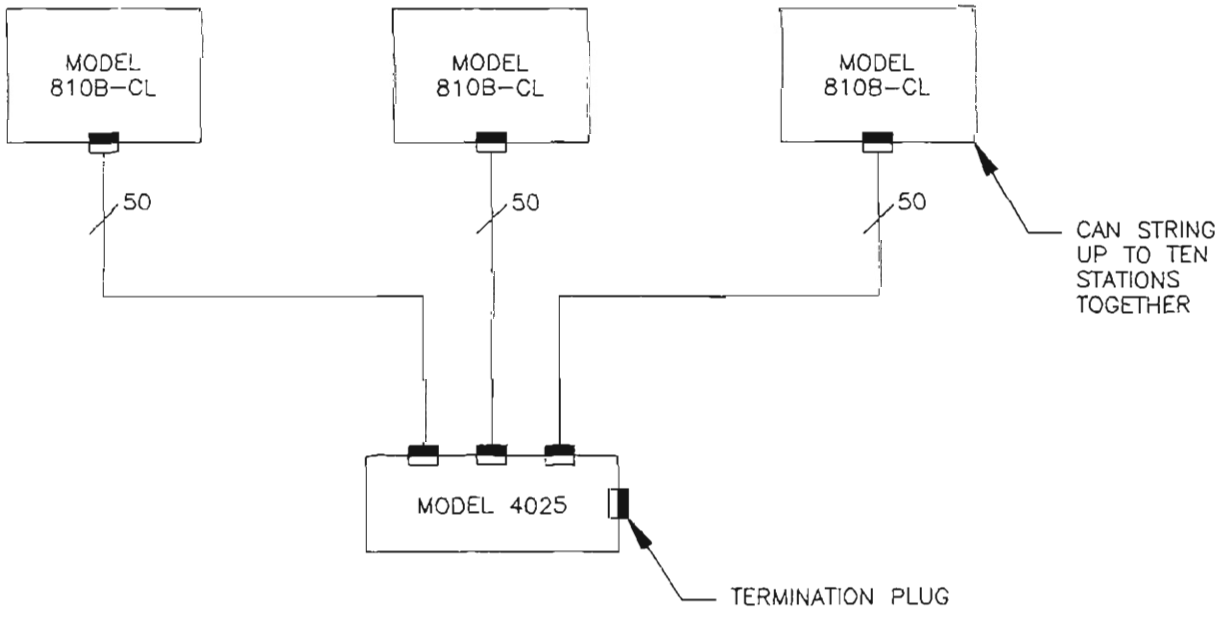


Figure 3-3A
Conference Style System Block Diagram

3.3.4 Talk Assignments

In a Model 810B-CL, the talk assignments are factory set for each of the 10 channels. The assignments are made via jumpers in J33. See Figure 3-3B.

Add Berg #65474-001 (RTS #2007-0042-00) jumpers between:

J33 pins:	Switched/Talk Assign, Ch #:
1 and 2	1
3 and 4	2
5 and 6	3
7 and 8	4
9 and 10	5
11 and 12	6
13 and 14	7
15 and 16	8
17 and 18	9
19 and 20	10

Figure 3-3B
Conference Talk Assignments

3.3.5 Listen Assignments

In a Model 810B-CL, the listen assignments are factory set for each of the 10 channels. The assignments are made via jumpers J402. See Figure 3-3C.

J402 pins:	Switched Listen Assign, Ch #
1 and 2	1
3 and 4	2
5 and 6	3
7 and 8	4
11 and 12	6
13 and 14	7
15 and 16	8
17 and 18	9
19 and 20	10

Figure 3-3C
Conference Listen Assignments

3.3.6 Self Tally

In a conference style Model 810B, the tally between stations is defeated. This is done inside the 810B by unplugging P17 and P18 from the mother board. The Model 810B-CL does, however, contain the self tally feature. This is factory set via adding bus wire jumpers to the mother board at certain locations. See Figure 3-3D.

Add bus wire jumpers tothe mother board in the following positions:

	Self Tally, Switched #
TT1 to LL01	1
TT2 to LL02	2
TT3 to LL03	3
TT4 to LL04	4
TT5 to LL05	5
TT6 to LL06	6
TT7 to LL07	7
TT8 to LL08	8
TT9 to LL09	9
TT10 to LL10	10

Figure 3-3D
Self Tally Assignments for 810B-CL

3.3.7 Dip Switch Assignments

In a conference style 810B certain logic functions are used. The speaker dim function is enabled with the "All Talk" button. Speaker dim pot (R85) is factory set for -20dB. See Figure 3-3F.

S1-1: off (speaker dim enable with the mic switch
S1-2: on (speaker dim enable with the all talk switch
S1-3: off (auto speaker on)
S1-4: off (instant mic on)

Figure 3-3E
810B-CL Dip Switch Assignments

Pin	Description	Pin	Description
1	CHANNEL 1 AUDIO	26	CHANNEL 1 AUDIO
2	CHANNEL 2 AUDIO	27	CHANNEL 2 AUDIO
3	CHANNEL 3 AUDIO	28	CHANNEL 3 AUDIO
4	CHANNEL 4 AUDIO	29	CHANNEL 4 AUDIO
5	CHANNEL 5 AUDIO	30	CHANNEL 5 AUDIO
6	CHANNEL 6 AUDIO	31	CHANNEL 6 AUDIO
7	CHANNEL 7 AUDIO	32	CHANNEL 7 AUDIO
8	CHANNEL 8 AUDIO	33	CHANNEL 8 AUDIO
9	CHANNEL 9 AUDIO	34	CHANNEL 9 AUDIO
10	CHANNEL 10 AUDIO	35	CHANNEL 10 AUDIO
11	NOT USED	36	NOT USED
12	NOT USED	37	NOT USED
13	GROUND	38	GROUND
14	GROUND	39	GROUND
15	GROUND	40	GROUND
16	NOT USED	41	NOT USED
17	NOT USED	42	NOT USED
18	NOT USED	43	NOT USED
19	NOT USED	44	NOT USED
20	NOT USED	45	NOT USED
21	NOT USED	46	NOT USED
22	NOT USED	47	NOT USED
23	NOT USED	48	NOT USED
24	NOT USED	49	NOT USED
25	NOT USED	50	NOT USED

Figure 3-3F 810B-CL Pin Configuration

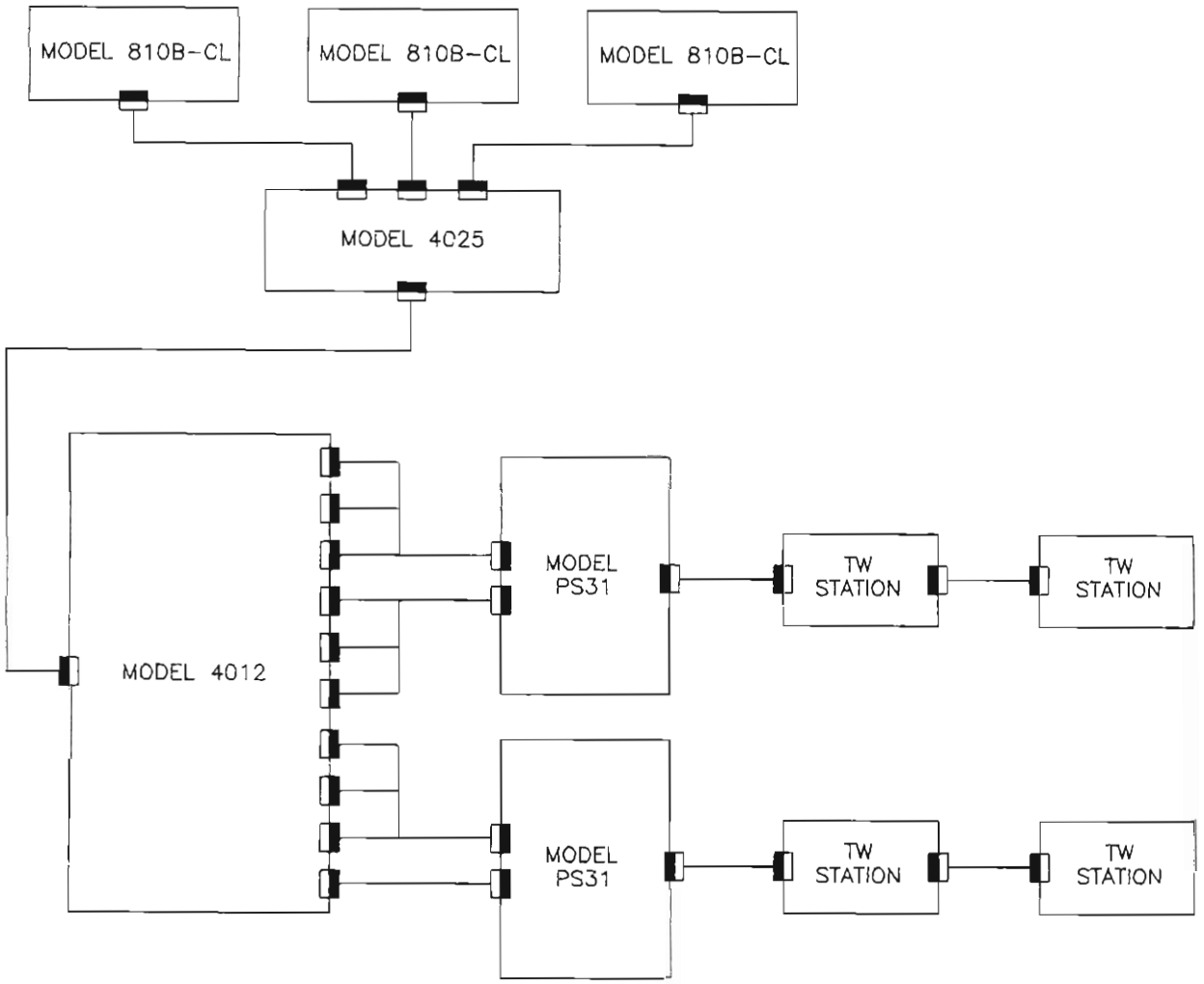


Figure 3-3G
Conference Style System to TW System

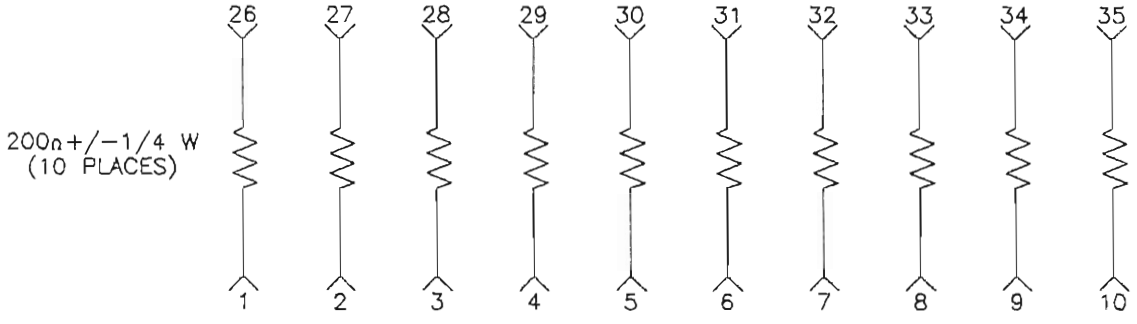


Figure 3-3H
Terminating a Conference Style System

3.4 Model 810B-5CTL

The Model 810B-5CTL configuration is operated in a dedicated line function. Each of the ten switches is assigned a channel number and either talk or listen control of the channel. This type of 810B can plug directly into an 802 or 801 system. Line termination (of 200 ohm) is accomplished by either a RTS Systems power supply or termination plug at the Model 862. Note: RTS Systems power supplies have an impedance of 200 Ohms designed into each channel line.

3.4.1 810B-5CTL Talk Assignments

In the Model 810B-5CTL, talk assignments are factory set via wire wrap jumpers in J33 on the mother board. See Figure 3-4A. Note: J33, pins 1 & 2 use Berg jumper #65474-001 (RTS #2007-0042-00) instead of wire wrap.

J33 Pins:	Switched Talk Assign, Switch #
1 and 2	1 (talk 1)
3 and 6	3 (talk 2)
5 and 10	5 (talk 3)
7 and 14	7 (talk 4)
9 and 18	9 (talk 5)

Figure 3-4A
810B-5CTL Talk Assignments

3.4.2 810B-5CTL Listen Assignments

In the Model 810B-5CTL, listen assignments are factory set via wire wrap jumpers in J402 on the mother board. See Figure 3-4B.

3.4.3 810B-5CTL Tally Assignments

In an 810B-5CTL, the tally between stations is defeated by unplugging P17 an P18 from the motherboard. The 810B-5CTL does, however, self tally when a Talk or Listen button is pushed. The self tally feature is accomplished by adding buss wire jumpers to the mother board at certain locations. See Figure 3-4C.

3.4.4 Dip Switch Assignments

In an 810B-5CTL, certain logic functions are used. The speaker dim function is enabled via the ALL TALK button. The speaker dim pot (R85) is factory set for -20dB. The "ALL" bus is disconnected from the "Listen" switch contacts by removing D347, D349, D351, D353 and D355. See Figure 3-4D for dip switch assignments.

3.4.5 810B-5CTL Interconnection to TW System

See Figure 3-4F for system interconnection. Line termination must be provided by either a termination plug or a RTS Systems power supply.

J402 Pins:	Switched Listen Assign, Switch #
2 and 3	2 (listen 1)
4 and 7	4 (talk 2)
6 and 11	6 (talk 3)
8 and 15	8 (talk 4)
10 an 19	10 (listen 5)

Figure 3-4B
810B-5CTL Listen Assignments

	Self Tally, Switch #
TT1 to LL01	1 (talk 1)
TT2 to LL02	2 (listen 1)
TT3 to LL03	3 (talk 2)
TT4 to LL04	4 (listen 2)
TT5 to LL05	5 (talk 3)
TT6 to LL06	6 (listen 3)
TT7 to LL07	7 (talk 4)
TT8 to LL08	8 (listen 4)
TT9 to LL09	9 (talk 5)
TT10 to LL10	10 (listen 5)

Figure 3-4C
810B-5CTL Self Tally Assignments

S1-1: off	(speaker dim enable with mic switch
S1-2: on	(speaker dim enable with the all talk switch)
S1-3: off	(auto speaker on)
S1-4: off	(instant mic on)

Figure 3-4D
810B-5CTL Dip Switch Assignments

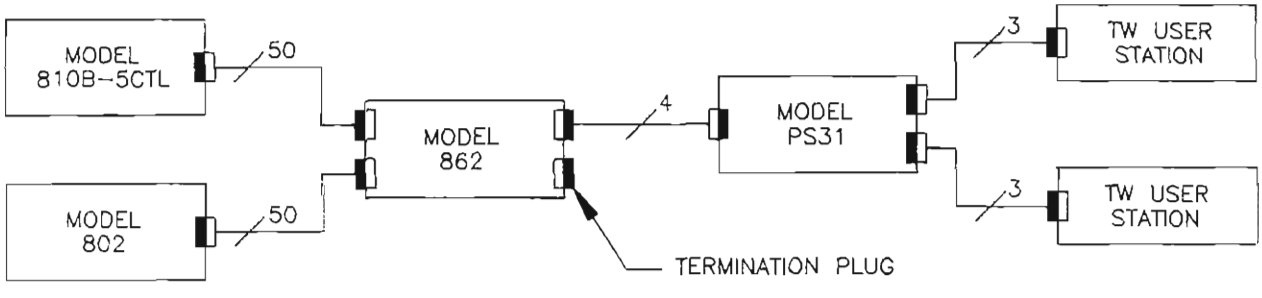


Figure 3-4E
810B-5CTL TO 802/TW System

Pin	Description	Pin	Description
1	CHANNEL 1 AUDIO	26	CHANNEL 1 AUDIO
2	CHANNEL 2 AUDIO	27	CHANNEL 2 AUDIO
3	CHANNEL 3 AUDIO	28	CHANNEL 3 AUDIO
4	CHANNEL 4 AUDIO	29	CHANNEL 4 AUDIO
5	CHANNEL 5 AUDIO	30	CHANNEL 5 AUDIO
6	CHANNEL 6 AUDIO	31	CHANNEL 6 AUDIO
7	NOT USED	32	NOT USED
8	NOT USED	33	NOT USED
9	NOT USED	34	NOT USED
10	NOT USED	35	NOT USED
11	NOT USED	36	NOT USED
12	NOT USED	37	NOT USED
13	GROUND	38	GROUND
14	GROUND	39	GROUND
15	GROUND	40	GROUND
16	NOT USED	41	NOT USED
17	NOT USED	42	NOT USED
18	NOT USED	43	NOT USED
19	NOT USED	44	NOT USED
20	NOT USED	45	NOT USED
21	NOT USED	46	NOT USED
22	NOT USED	47	NOT USED
23	NOT USED	48	NOT USED
24	NOT USED	49	NOT USED
25	NOT USED	50	NOT USED

Figure 3-4F
Model 810B-5CTL Pin Configuration

3.5 Matrix System Configuration (810B-AA)

The matrix intercom system is interconnected using Model 4025A or 4027 splitters as shown in Figure 3-5. Matrix-configured user stations have alternate action switches (-AA option) allowing users to punch up a station or set of stations and speak without having to hold the buttons down while talking. This type of system does not have tally lighting. Each station is dedicated to a different channel. See Section 3.1. The J102 pin-out configuration for the Matrix Configuration is the same as the Squawk Configuration. Insert the system termination plug into a connector location on the Model 4025A splitters as shown.

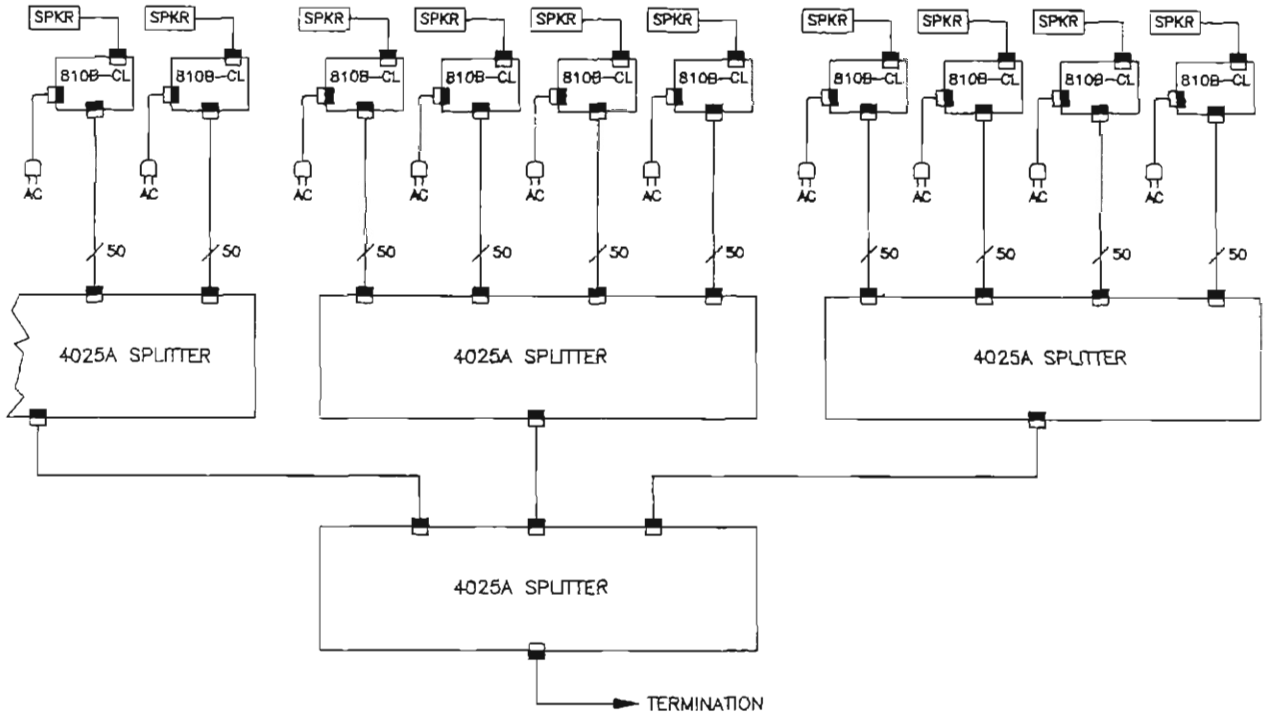


Figure 3-5
Matrix System Block Diagram

3.5.1 810B-AA Talk Assignments

The 810B-AA talk assignments are factory set for each of the 10 buttons. The assignments are made via jumpers in J33 on the mother board. See Figure 3-5A. Add Berg #65474-001 (RTS #2007-0042-00) jumpers (10 total) between:

J33 pins:	Switched Talk, Assign, Ch #
1 and 2	1
3 and 4	2
5 and 6	3
7 and 8	4
9 and 10	5
11 and 12	6
13 and 14	7
15 and 16	8
17 and 18	9
19 and 20	10

Figure 3-5A
810B-AA Talk Assignments

3.5.2 810B-AA Listen Assignments

The 810B-AA listen assignment is made via a jumper in J401 on the mother board. Only one channel should be selected per unit. See Figure 3-5B. Assign squawk listen address by adding one Berg #65474-001 (RTS #2007-0042-00) jumper in one of the following positions:

Between J401 pins:	Squawk/Permanent, Listen Assign, Ch #
1 and 2	1
3 and 4	2
5 and 6	3
7 and 8	4
9 and 10	5
11 and 12	6
13 and 14	7
15 and 16	8
17 and 18	9
19 and 20	10

Figure 3-5B
810B-AA Listen Assignment

3.5.3 810B-AA Tally Assignments

In a matrix style 810B-AA , the tally between stations is defeated by unplugging P17 and P18 from the mother board. The 810B-AA, however, will self tally when a channel button is pushed on. See Figure 3-5C. Add Bus wire jumpers (10 total) to the mother board in the following positions:

	Self Tally, Switch #
TT1 to LL01	1
TT2 to LL02	2
TT3 to LL03	3
TT4 to LL04	4
TT5 to LL05	5
TT6 to LL06	6
TT7 to LL07	7
TT8 to LL08	8
TT9 to LL09	9
TT10 to LL10	10

Figure 3-5C
810B-AA Tally Assignments

3.5.4 810B-AA Dip Switch Assignments

In the 810B-AA, certain logic functions are used. The speaker dim feature is enabled when the ALL TALK button is active. The speaker dim pot (R85) is factory set for -20dB. See figure 3-5D for dip switch assignments.

S1-1: off (speaker dim enable with the mic switch)
S1-2: on (speaker dim enable with the all talk switch)
S1-3: off (auto speaker on)
S1-4: off (instant mic on)

Figure 3-5D
810B-AA Dip Switch Assignments

3.6 Combinations Systems

The Model 810B is designed so users have the option of combining several elements of a system to produce "custom" set-ups. Contact the factory for details.

3.7 810B Features

Each 810B unit contains many built-in features. This section will explain their operation and user connections to these features.

3.7.1 Dynamic Microphone Headset

This front-panel connector is provided for connecting our standard headsets. This allows private conversations. The connections for this connector are shown in Figure 3-7.5.

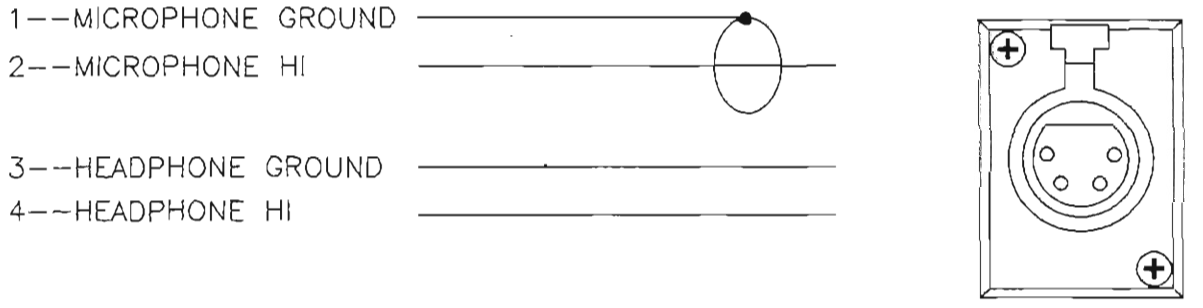


Figure 3-7.5
Dynamic Microphone Headset Connections

3.7.2 Gooseneck Microphone (Optional)

The gooseneck mic attaches to the Model 810B front panel. RTS Systems supplies an electret gooseneck microphone, which is specially designed for us. The gooseneck microphone wires are connected to a 4 pin Molex plug labeled P22. P22 is connected to the Model 810B mother board through J22 which is a 4-pin Molex connector. The pin-out description is:

Pin 1 - mic hi/voltage supply
Pin 2 - n/c
Pin 3 - mic low
Pin 4 - chassis ground

3.7.3 Alternate Electret Microphone Connection (on rear panel, J103)

This connection is used as a an alternate connection to electret microphones. If the microphone selected requires a different bias network, remove J103, R17, R18 and C2. Adjust R81 (mic level pot) as desired. Wire as follows:

Pin 8 - mic hi
Pin 9 - voltage supply (when R1 on circuit board is connected)
Pin 7 - mic low
connect shield to chassis of 810B

3.7.4 Alternate Dynamic Microphone Gooseneck (on rear panel, J103)

When replacing the electret gooseneck mic with a dynamic mic gooseneck do the following: Remove R1, R18, C2, C1 and C3. Wire the gooseneck to J103 as follows:

Pin 8 - mic hi
Pin 9 - n/c
Pin 7 - mic low
connect shield to chassis of 810B

3.7.5 External Headset (on rear panel, J103)

This is used as an extension to the front-panel DYNAMIC HEADSET CONNECTOR. Only one connection to a headset may be used at a time. The microphone must be connected with a separate shielded cable to avoid electrical coupling of the headphone into the microphone. Do not connect the microphone ground and the headset ground together. To disable the front panel dynamic headset connector, unplug P21 (4-pin Molex connector) from the terminal labeled "J21" on the Model 810B printed circuit board. Wire the external headset to J103 as shown in Figure 3-7.5A

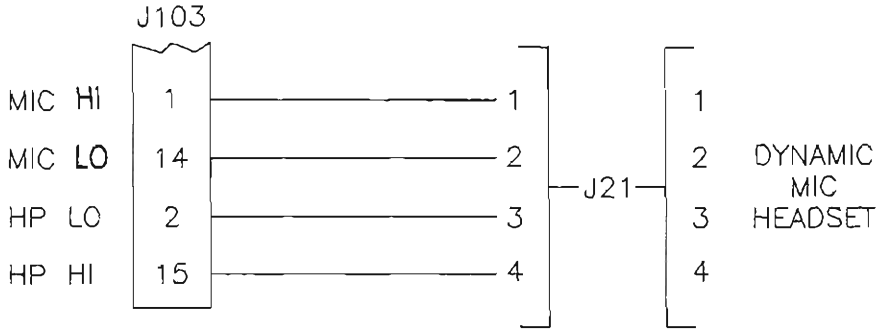


Figure 3-7.5A
External Headset Connections

3.7.6 Remote Microphone Switch
(on rear panel, J103)

These connections are used as an external microphone switch such as a footswitch. Short these contacts to turn the microphone on. The front-panel microphone switch must be OFF. Wire external switch to J103 as shown in Figure 3-7.6.

3.7.7 Unswitched Microphone Output (on rear panel, J103)

These contacts provide a transformer-balanced line-level output from the microphone preamplifier and limiter. It is not affected by the MIC ON switch. The output level is 3 volts peak-to-peak nominal. Connections are shown in Figure 3-7.7.

3.7.8 Remote Speaker Switch (on rear panel, J103)

Shorting the contacts turns the speaker on when the front-panel speaker switch is in the OFF position. See Figure 3-7.8.

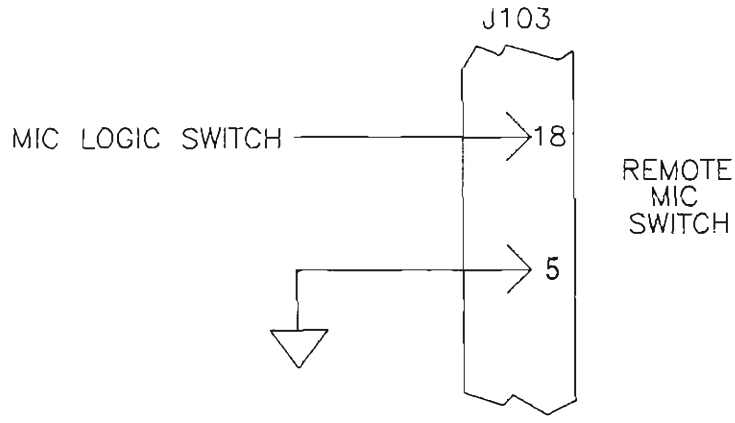


Figure 3-7.6
Remote Microphone Switch Connections

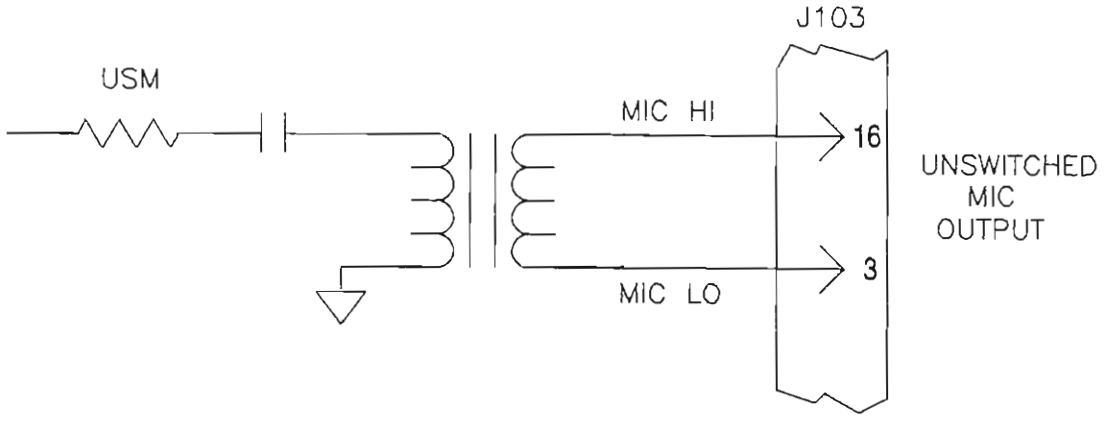


Figure 3-7.7
Unswitched Microphone Output Connection

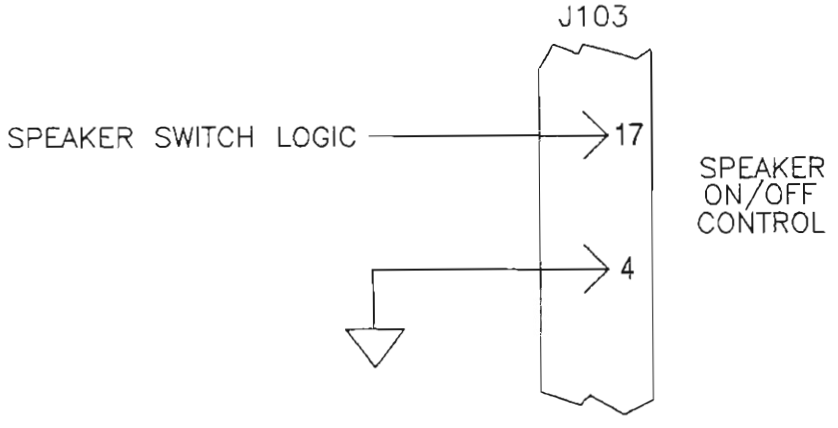


Figure 3-7.8
Remote Speaker Switch Connections

3.7.9 Listen Out/Talk In

In the standard factory configuration J103 pins 6 (Hi) and 9 (lo) are internally connected to the headphone amplifier output via jumper W2; this is the LISTEN OUT configuration. Pins 6 and 9 may be optionally connected to the LISTEN SUM AMP output which precedes the volume control, by removing jumper W2 and installing jumper W1; this is the TALK IN configuration. See Figure 3-7.9. The volume of the TALK IN program will be controlled by the 810B MASTER VOLUME control.

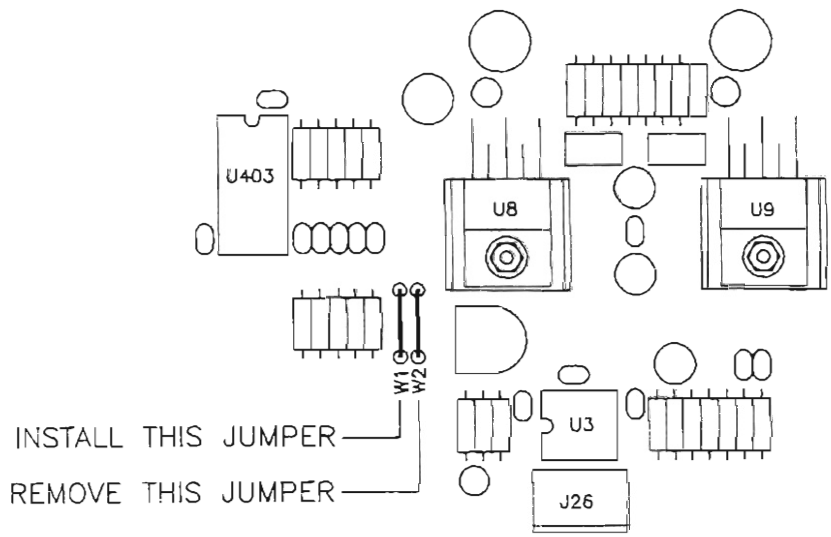


Figure 3-7.9
Listen Out / Talk In Jumpers

3.7.10 External Speaker Output

This connector is the output from the speaker amplifier. Note that the output is on the TIP and SLEEVE of the 1/4" stereo phone plug. Connections are shown in Figure 3-7.10.

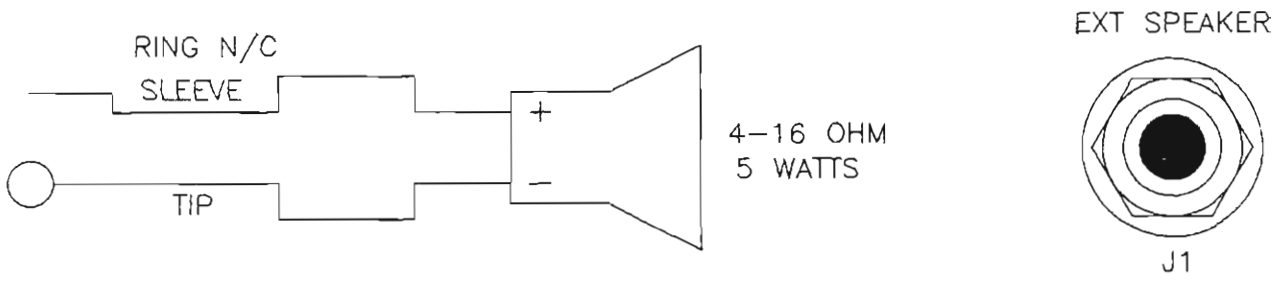


Figure 3-7.10
External Speaker Connections

3.7.11 Microphone Limiter (R43)

The microphone limiter control is used to adjust the output of the microphone amplifier circuit. It is normally factory set for 3 volts peak to peak output (at U4, pin 1). See Figure 3-7.11.

3.7.12 Microphone Level Control (R81)

The microphone gain control is used when connecting microphones with output levels different from the microphones normally supplied, or when the user is unusually soft or loud in his/her speaking voice. The microphone gain control, trim pot R81, can be adjusted for the desired microphone preamplifier gain. This control is factory-set at midpoint. See Figure 3-7.11

3.7.13 Auto Speaker On (S1-3)

On a Squawk style unit, this function is normally factory enabled and causes the external speaker to turn on when any incoming signal is received at the assigned listen channel. The function is normally disabled in conference style units. To disable the function, move DIP switch S1-3 to the OFF position. See Figure 3-7.12.

3.7.14 Instant Microphone On (S1-4)

The "instant microphone on" function automatically turns on the microphone when a station or TALK button is pressed, even when the front-panel mic switch is in the OFF position. On a Squawk style, it is normally set at the factory for ON. The function is normally disabled on conference style units. To disable the instant mic on, move switch S1-4 to the OFF position. See Figure 3-7.12.

3.7.15 Speaker Dim Enable (S1-1 and S1-2)

The speaker dim function automatically enables in one of two ways (see Figure 3-7.12):

1) with the MIC ON switch, when S1-1 is ON (squawk style) or,
2) with the ALL TALK switch, when S1-2 is ON (conference style).

R85 (speaker dim level pot) adjusts the level of speaker dim.

3.7.16 Speaker Dim Adjustment

R85 controls the level of speaker dim when one of the Speaker Dim Enable switches is selected. The factory adjustment made for squawk style units is -15 dB; for conf-erence style units the speaker dim is adjusted for -20 dB.

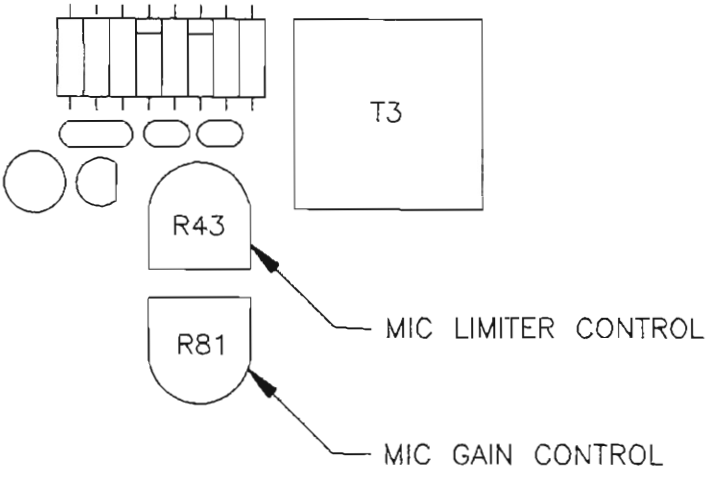


Figure 3-7.11
Microphone Adjustments

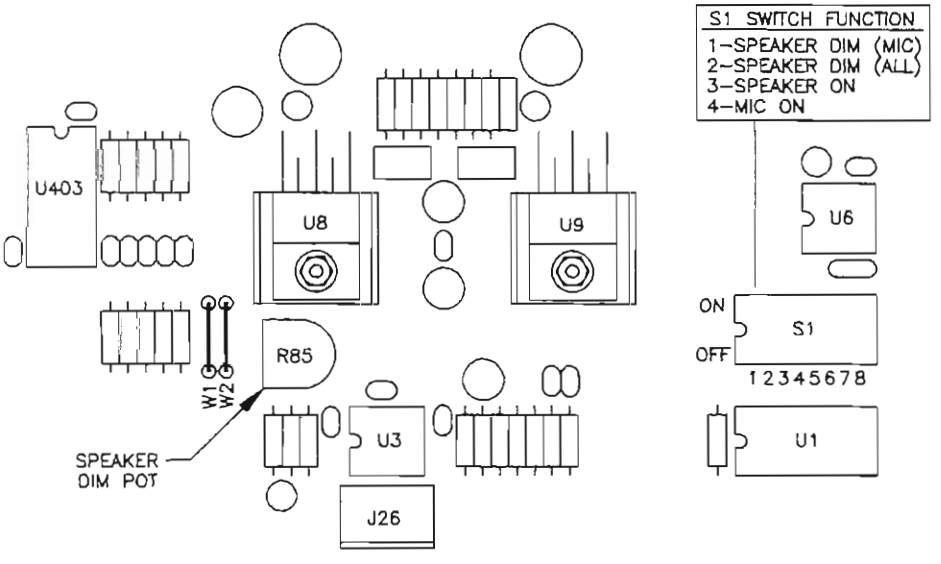


Figure 3-7.12
Switchable Options

3.8 Special Applications
3.8.1 Minimum Volume

The minimum volume option prevents the volume control from being turned all the way down or off. To activate this feature, cut the trace under R49 on circuit side of 810B board see Figure 3-8.1. This affects both the headphone and speaker volume.

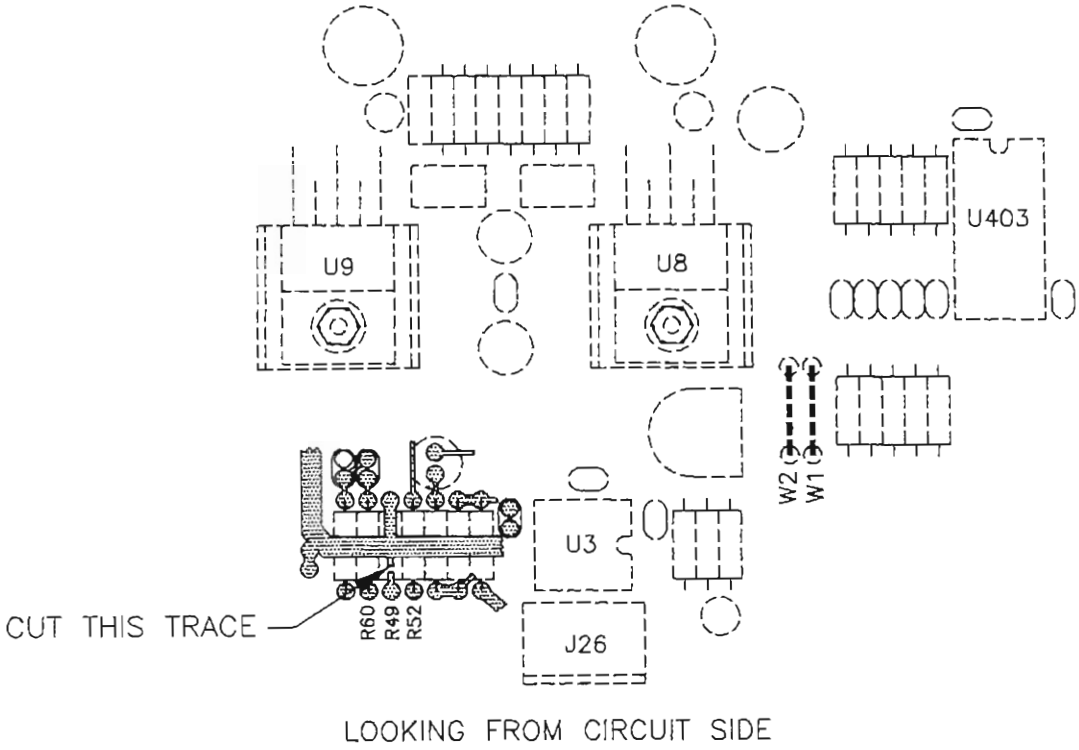


Figure 3-8.1
Minimum Volume Modifications

3.8.2 Auto Answer Back

The AUTO ANSWER BACK feature allows a person to respond to an incoming signal message without having to press any buttons. To implement this feature in a standard 810B, install the jumpers listed in the table below.

EV1 -> TT1	Channel 1
EV2 -> TT2	Channel 2
EV3 -> TT3	Channel 3
EV4 -> TT4	Channel 4
EV5 -> TT5	Channel 5
EV6 -> TT6	Channel 6
EV7 -> TT7	Channel 7
EV8 -> TT8	Channel 8
EV9 -> TT9	Channel 9
EV10 ->TT10	Channel 10

After the jumpers have been installed, verify S1-3 is in the ON position.

3.8.3 Interface to Model 802 Master Station

An 810B user station may be connected to a MODEL 802 MASTER STATION. This allows 810B to use the speaker and the microphone in the Model 802. To accomplish this, see Figure 3.8.2. Set the 802 LEVEL switch to MIC LVL and the MODE switch to UNSW. Verify the internal speaker switch on the 802 rear panel is selected on. The AUX VOL control on the 802 front panel will adjust the 810B volume in the 802. Verify that P1 switches and control pots in the adjustment board are ON.

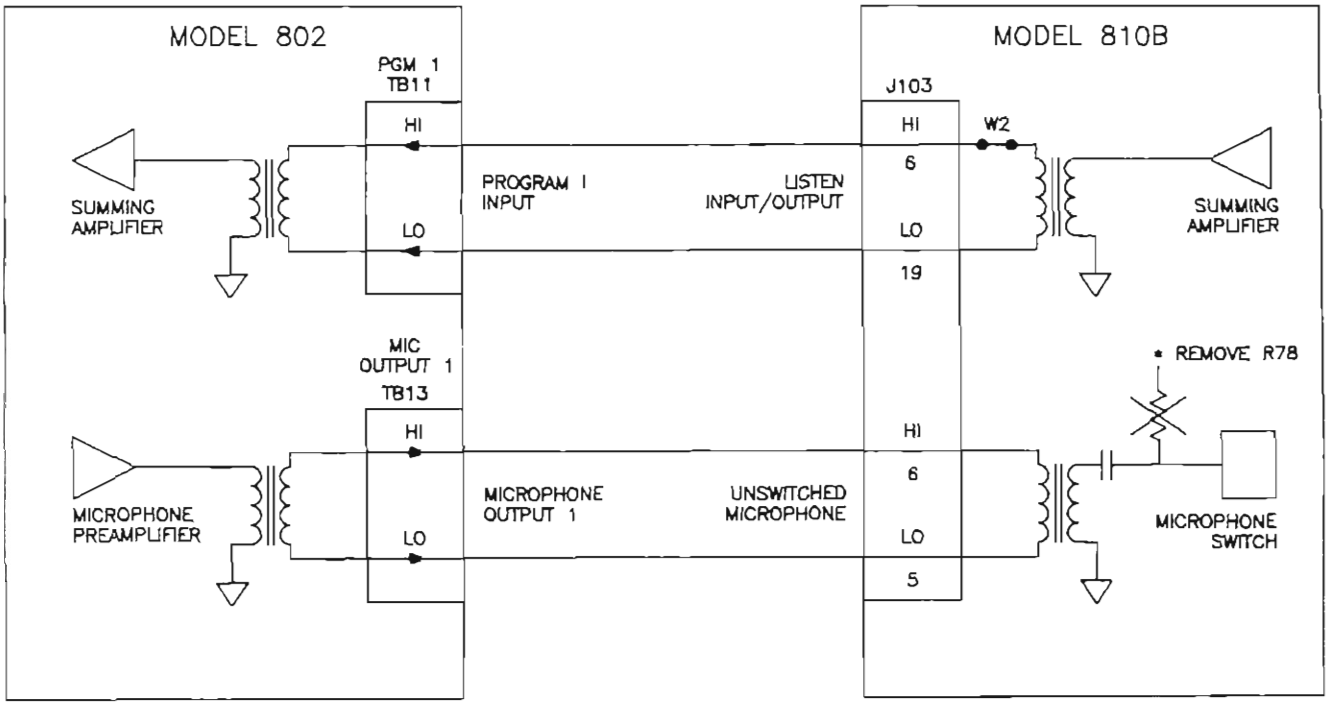


Figure 3-8.2
810B Interface to 802

3.8.4 Interface to TW Intercom Speaker Station

An 810B user station can be connected to a TW Speaker Station that has the squawk option added. This allows the speaker and the microphone in the TW Speaker station to be used in place of those on the 810B. Figure 3-8.3 shows the connections.

3.8.5 Arbitrary System Interconnection Requirements

Other devices may also be connected to the 810B. Before connecting external devices, verify that the device being connected does not exceed the ratings of the 810B.

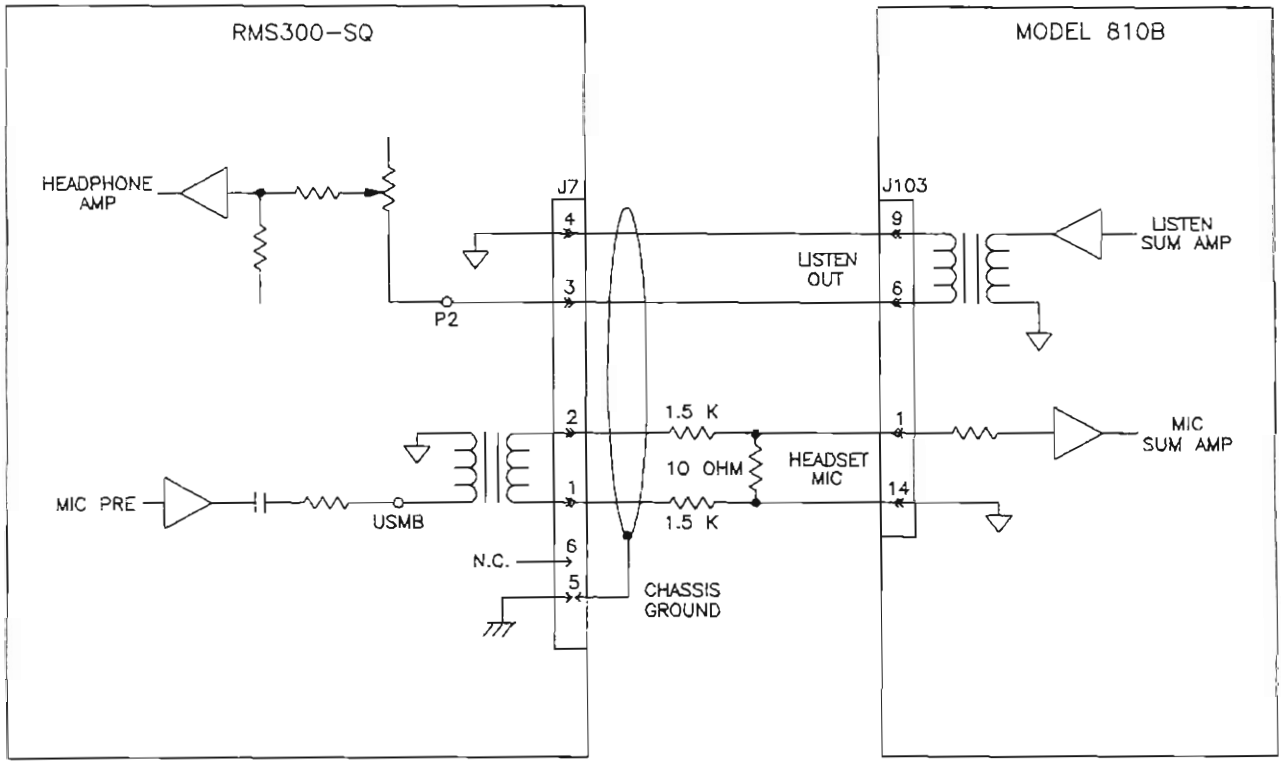


Figure 3-8.3
810B Interface to TW Speaker Station

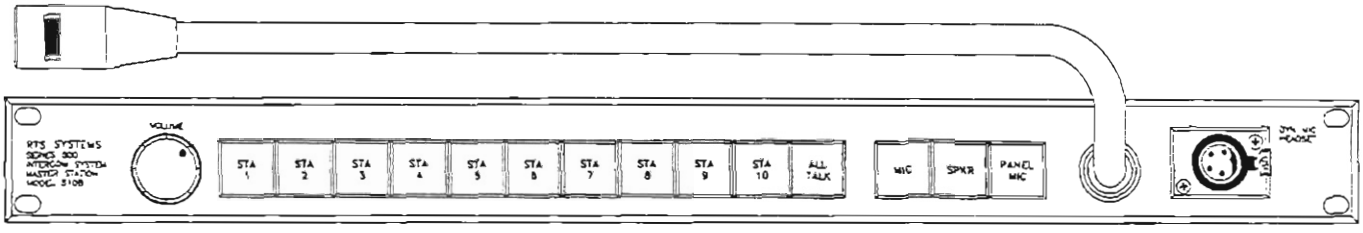


Figure 3-8.4
Model 810B Front Panel

3.8.6 Operating Controls

Figure 3-8.5 lists the Model 810B front panel operating controls. The reference numbers in this table correspond to the circled numbers in Figure 3-8.4.

Ref No.	Name	Description
1	MASTER Volume Control Pot	Adjusts the sound level of the speaker and the headset.
2	Channel Select Switches	Pushbutton switches. Selects which channel the user wishes to talk to. It is an alternate action (push-on/push-off) switch in-AA,-CL, or -5CTL configuration. It is a momentary action switch when used in the squawk configuration.
3	(Optional) Gooseneck Mic	An electret gooseneck microphone for the 810B. Is active when the PANEL MIC switch is pushed on.
4	DYN MIC Headset Connector	A female 4-pin XLR-type connector. Standard 4-pin headsets purchased from RTS Systems plug in here.
5	MIC ON Switch	An alternate action pushbutton switch which turns on the microphone as selected via the PANEL MIC switch.
6	SPKR ON Switch	An alternate action pushbutton switch which turns on the speaker amplifier.
7	PANEL MIC Switch	An alternate action pushbutton switch connects the gooseneck microphone when the switch is pushed in ("on") the headset microphone when the switch is selected out ("off"). The indication for ON is a bright switch and the indication for OFF is a dim switch.

Figure 3-8.5
810B Front Panel Operating Controls

3.8.7 Rear Panel Connections

Table 3-8.6 below lists the 810B operating controls and connections found on the rear panel. The reference numbers correspond to the circled numbers in Figure 3-8.7.

Table 3-8.6

Ref. No.	Name	Description
1	PWR IN, Connector J101	A 4-pin circular connector. 14 volts AC at 1.6 amps is required here, at pins 2 and 3, to operate the unit. A DC power supply can be used. Contact factory for more information.
2	AUXILLARY CONNECTIONS, J103	A 25 pin female "D" connector. Has connections for External Headset, Unswitched Mic, Remote Speaker Switch, Remote Mic Switch, Panel Mic, and spares for special connections.
3	POWER AMP OUT TO LOUDSPEAKER	Connector J1 a 1/4" stereo phone jack, is the output connector to an external speaker.
4	LINE CONNECTION, J102	A 50-pin micro-ribbon connector. This is the line input/output connection. This connector is usually connected to the Model 865, Model 4012, or it can be connected to another system. System termination is made at this point or at any other direct connection to this point.

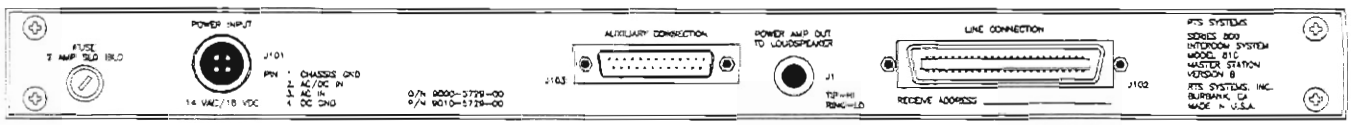


Figure 3-8.7
Model 810B Rear Panel

SECTION 4: THEORY OF OPERATION

4.1 Introduction

Section Four is a description of how the 810B system works as well as the operation of each unit.

4.2 System Theory

4.2.1 Signal Paths

A typical system consists of Model 810B squawk style stations, an 865 Central Matrix and interconnecting 50-conductor cables. In each Model 810B user station there are 10 identical talk/listen channels. These 10 channels are connected together throughout the whole system. Thus channel 1 in station #1, is channel 1 in all other Model 810B's in the system. Any station may talk or call to any channel. For a station to receive a call, the listen amplifier must be connected to (usually by a jumper) the channel the user wishes to hear. In a standard squawk configuration each station is dedicated to hear only one channel.

In a conference style system, all channels are interconnected. The front-panel channel select buttons are connected to the listen amplifier; thus you may listen to as many channels as you select.

4.2.2 Tally Paths

The tally lights are usually routed by the circuit board in the 865. In each 810B station there are 10 tally outputs from the switches and 10 tally inputs to the lamps. The tally outputs are cabled to the circuit board in the 865 which sends them to the proper tally inputs on the 810B proper station. See Figure 4-1. This is true for squawk style units and is used for caller identification. For conference style units, tally is used to indicate switch action only (called self tally).

This figure appears on Page 94 at the rear of this manual.

Figure 4-1
Basic Block Diagram, Model 810B

4.3 Model 810B Overall Functional Description

For this discussion, please refer to page 1 of the schematic SD5732. Beginning with the upper left-hand side there is have the Electret Bias Network. The standard panel microphone is a gooseneck electret condenser microphone. MIC Select allows between the headset mic or the gooseneck mic.

The Mic Pre amplifies the microphone signal to a line level signal. R43 is the limiter adjust. The limiter controls the gain of the mic pre. R81 controls the gain before limiting.

The electronic mic switch is controlled by Mic Logic. Mic logicis controlled by Pin 9 and determines whether the mic will be turned on or off. The standard input is from the front-panel MIC switch and the rear-panel terminal strip REMOTE MIC SWITCH J103 pins 9 and 10. When S1-4 is in the ON position, the mic will turn on whenever a channel select button is pressed. This feature is called Instant Mic. The MS1 input can also be used to turn the mic on. If any of these features are enabled the mic will be on. All of these features must be off for the mic to turn off.

When the electronic mic switch is on, signal is fed to the buffer amplifier where the level is 3 volts peak-to-peak nominal. The buffer amplifier feeds 10 electronic switches that feed 10 line drivers. The electronic switches are controlled by the "TC" inputs.

The line drivers are voltage controlled current sources. A current source allows many stations to be connected to the same line with no loading effects. With no input signal, a voltage controlled current source will output or sink no current. (From Ohm's law VOLTS/I=R). No matter what the audio voltage on the line is, V/I is infinite. Thus many stations can be placed on the line without loading down the audio signal. Unfortunately in real life our current sources aren't perfect so there is a limit to the number of stations that can be placed on the line. Contact the factory for specifics.

The output current from the line drivers are converted to a voltage at the 865 junction. Here a 200 ohm resistor is placed across each line. When 5 milliamperes flows out the line driver, 0.005 x 200 = 1\VOLTS will appear across the resistor and on the line. A signal of 3 volts peak-to-peak at the input of the line driver will yield 10 milliamperes peak-to-peak on the line which will translate to 0.01 x 200 = **2 volts peak-to-peak audio on the line.**

The line driver also inverts the signal. Which allows nulling of the users own voice at their station. The nulling of sidetone is accomplished by a pot. By setting the wiper of the pot somewhere near midpoint a null will be obtained. This allows cancellation of the station's own audio. Audio from other stations will, however, pass through the pot. If the pot is connected to the listen amplifier as LT7 is in the block diagram, the station operator will be able to hear all calls on that channel. In a standard squawk configuration, each station is jumpered to monitor one channel. In a conference style system, each listen tap (LT) is brought through the switch module (TT) to the listen sum amplifier. Thus, whenever a channel select button is pressed, the corresponding channel will be heard.

The listen sum amplifier sums all the audio coming into it. The output from the Listen Sum Amplifier feeds the front-panel volume pot. It controls the level going to the Headphone Amplifier.

The front panel volume pot also feeds the electronic speaker switch which feeds the buffer amplifier that drives the speaker amplifier. The speaker jack J1, when used, connects to an external speaker.

The electronic speaker switch is controlled by the front-panel speaker switch, the rear-panel REM SPK SW, and the lamp module if S1-3 is in the on position. S1-3 is the speaker override switch. Whenever a call is received, a command is sent through S1-3 to automatically turn the speaker on. This command is derived from the tally lights.

The speaker dim function is controlled by two switches, S1-1 and S1-2. In the standard squawk configuration, S1-1 is used to dim the speaker 10dB (via R85) when the MIC button is enabled. In a conference style unit, S1-2 is used to dim the speaker 20dB (via R85) when the ALL TALK button is enabled. Only one speaker dim selection should be made in an 810B.

The switch module controls the talk electronic switches and the tally outputs to the 865. The lamp module recieves the incoming tally signals and controls the brightness of the lamps. This provides the proper signal for the auto answer back feature.

4.3 Model 810B Overall Functional Description (continued)

The power supply takes in 14 volts AC at 1.6 amperes, rectifies and filters it. Unregulated 14 volts DC feeds the lamps. The regulated 12 volts feeds the electronics. The 6 volts is used to bias the op-amps.

4.4 Operating Distances and Special Considerations

The Model 810B user station will operate at up to 1 mile from the 865 with #22 gauge, twisted pair-cable.

SECTION 5: MAINTENANCE

5.1 Introduction

This section provides service information for normal maintenance, factory performance tests and troubleshooting information.

5.2 Service Information

The Model 810B is warranted for a period of one year from the purchase date. A copy of the warranty is located at the front of this manual.

5.3 General Maintenance

These servicing instructions are for qualified personnel only. To avoid electric shock, do not perform any servicing other than that contained in the operating instructions unless qualified to do so.

> **WARNING:** Disconnect power before servicing.

5.3.1 Safety Considerations

Although this equipment has been designed in accordance with international safety standards, this manual contains information, cautions, and warnings which must be followed to ensure safe operation and to maintain the equipment in safe operating condition. Service and adjustments should be performed only by qualified service personnel.

Any adjustment, maintenance, and repair of the opened equipment while any power or voltage is applied should be avoided as much as possible, and, when inevitable, should be carried out only by a skilled person who is aware of the hazard involved.

W A R N I N G

Any interruption of the protective grounding conductor (inside or outside the equipment) or disconnection of the protective earth is likely to make the equipment dangerous. Intentional interruption of the protective grounding conductor is strictly prohibited.
It is possible for capacitors inside the equipment to still be charged even if the equipment has been disconnected from its power source.
The service information presented in this manual is normally used with the protective covers removed and power applied to the equipment. Energy available at many points may, if contacted, result in personal injury.

Access To get inside the MODEL 810B, remove the screws on the top and bottom covers. Slide covers off.

5.3.2 Cleaning

Clean the outside of the Model 810B with denatured alcohol or a mild solution of detergent and water. Clean the interior with dry, low pressure air. The circuit boards can be cleaned with trichloroethane or Freon TF. **Do not allow these or any solvents to get into the pots.**

5.4 Test Procedure

Equipment Needed (see Figure 5-2, Test Set-Up)

- -- Voltage and current metered variable voltage transformers, "VARIAC", "POWERSTAT", etc.
- -- Two Channel Oscilloscope, 15 megahertz minimum bandwidth.
- -- Audio Signal Generator, 20 hertz-20 kilohertz.
- -- AC voltmeter with decibel scale/bridging/600 ohm.
- -- RTS MCP1010/810B Test Fixture (SD2743), Figure 5-1.

This figure appears on Page 95 at the rear of this manual.

Figure 5-1
Model 810B Test Fixture

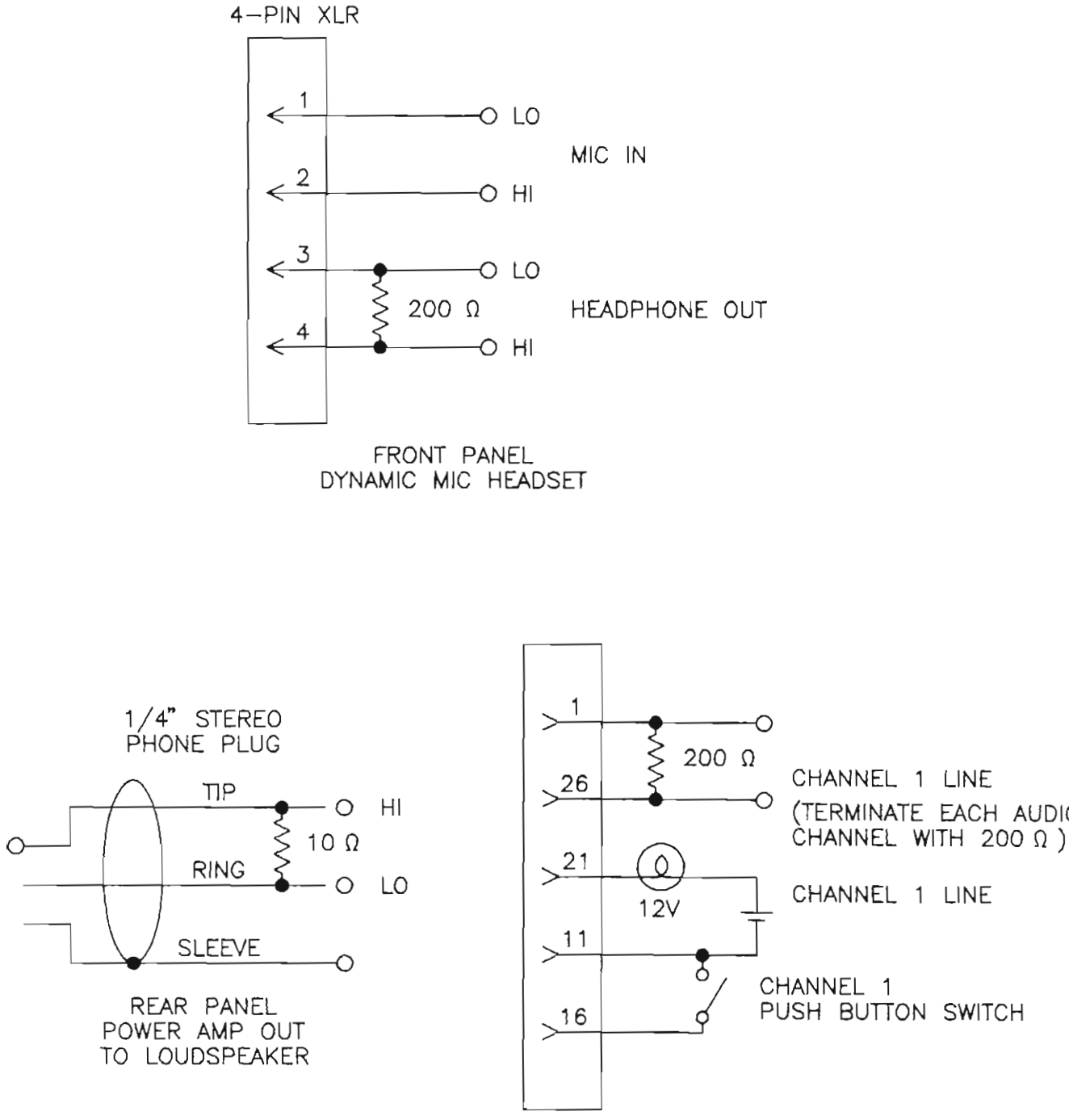


Figure 5-2
Model 810B Test Connections

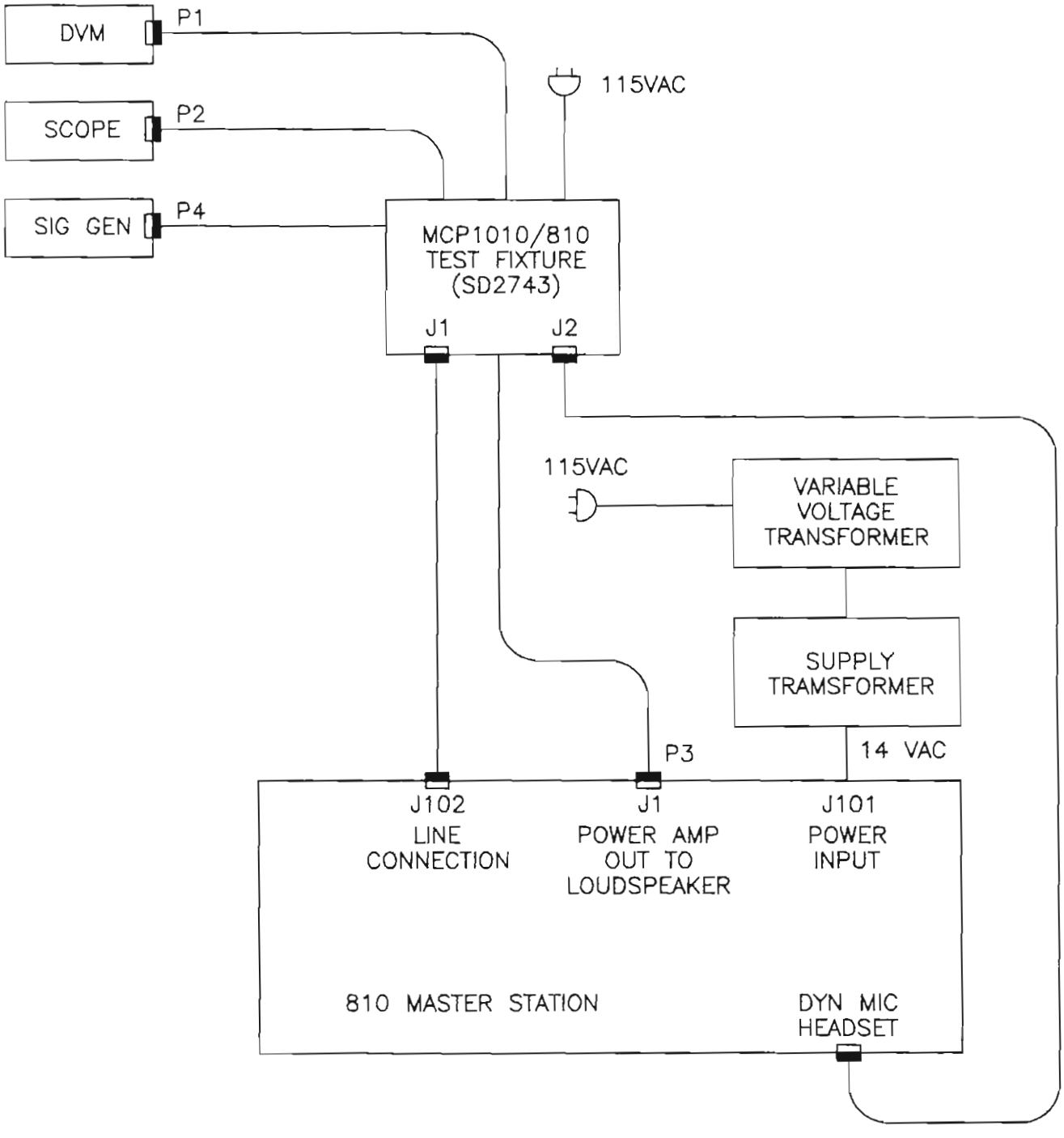


Figure 5-3
Model 810B Test Set-Up

Note:

If the RTS test fixture is not available, the testing may be performed by connecting the test equipment to the points on the 810B to be tested using the test connectors of Figure 5-3.

And for parts replacement:

Temperature controlled soldering iron, and
Rosin core, 60/40 composition, solder.

DO NOT USE SOLDER PASTE!

Documents required:

Schematic Diagrams, SD5732, SD5606
Figure 5-3 Model 810B Test Connections
Figure 5-2 Model 810B Test Set-up
Figure 5-1 Model 810B Test Fixture

5.4.1 Set Up

Visually inspect the board for proper I.C.'s and fuse (2 amp slow blow)

Check that all cables are plugged in properly and with the proper orientation.

Set the sidetone pots to midpoint (R110, R120, R130, ...R200). Set again pots to CCW (R117, R127, R137, ...R207)

Set R81 to midpoint. Set R43 fully counterclockwise.

Set all switches to off (both on the board and on the front panel). If the unit has alternate action call switches, switch them off (out position).

With an ohm meter, check for 22,000 ohms between circuit ground ("GND Test Point" on PC board) and chassis ground point, J22 pin 4.

Also check for 0 ohms between: The metal chassis of the 810B and pin 1 of the four pin connector (J101).
Connect the ribbon cable from the test fixture to J102.

5.4.2 Power Supply

Attach the power transformer to J101.

Using a variable voltage transformer, increase the voltage slowly to 120 volts, checking its amp meter for excess current consumption. If more than 750 milliamps, stop and troubleshoot.

With an isolated meter, measure the voltage across R321. It should be 45 millivolts DC.

Measure the voltage across C306 or C307. It should be 16.0 $\pm$ 0.5 volts, DC.

Measure the voltage across C308. It should be 12.7 $\pm$ 0.2 volts, DC.

Measure the voltage at the output of U302. It should be 6.0 $\pm$ 0.3 volts, DC.

All lights should be on dim.

5.4.3 Microphone Preamplifier And Limiter

Apply a 123 millivolt peak to peak, 1,000 Hertz signal to the front-panel microphone connector by setting the signal generator switch on the test fixture to MIC. The level can be checked by setting the meter/scope switch to MIC and verify signal on the scope. Connect the scope probe to U4 pin 1. Adjust R43 for 3.3 volts peak to peak.

5.4.3.1 USM Output

Check USM (unswitched microphone output) at J103 pins 3 and 6. Output level should be 3.0 $\pm$ 0.5 volts peak to peak.

Connect probe to U4 pin 7. There should be no signal with MIC switch off. Push on the front-panel MIC switch. Signal should be 3.0 $\pm$ 0.5 volts peak to peak.

Select PANEL MIC switch to on, the 1,000 Hertz tone should disappear and the panel MIC should be seen operating on the scope. Turn off the PANEL mic and see 3.0 $\pm$ 0.5v peak-peak on scope with the microphone switch on.

Reduce microphone signal by 20 dB (to 12 millivolts peak-to-peak). Change the frequency to 100 hertz, then to 10,000 hertz. The signal should remain above 2 volts peak-to-peak. Return the input signal to 120 millivolts peak to peak and 1,000 Hertz.

5.4.4 Line Driver Outputs

Connect a 120 millivolt, 1,000 hertz signal to the front-panel headset connector by setting the signal generator switch to MIC. Set the meter/scope switch to LINE and the line switch to 1. Press front-panel button 1. Button 1 on the test fixture should light. Check for 2.0 +/ -0.5 volts peak to peak on the line. Release button 1. The signal should stop. Press the ALL button. The signal should resume and all the lights on the test fixture should light. Release the ALL button.

Repeat for outputs 2 through 10.

5.4.4.1 Listen Select

If testing a squawk style 810B, add address jumper for channel 1 (insert into J401), pins 1-2 are channel 1, pins 3-4 are channel 2, etc.

Repeat for channels 2 through 10 setting, resetting the address jumper in the appropriate position. Inset address jumper in channel 1 position. The mic switch should be off. Set the signal generator switch to line and the signal level to 2 volts peak to peak. Set the test fixture line switch to channel 1. Set the scope switch to HP and turn the volume level up half way. Depress talk channel 1 button.

The signal should appear at the headphone output.

5.4.5 Listen Sum Amp

Connect the oscilloscope to pin 7 of U3. Connect a 1 volt peak to peak, 1,000 Hertz signal to E62 using the probe on the test fixture with the signal generator switch set to PROBE.

Check for 3.0 $\pm$ 0.5 volt peak to peak output.

Leave signal in E62 input point on PC board.

5.4.6 Speaker Amp, External Speaker Jack And Speaker ON-OFF Switch

Insert the EXT SPKR plug from the test fixture into the rear-panel EXT SPKR jack. Set the meter/scope switch to EXT SPKR. Turn the volume up 50%.

Verify signal is being applied to E62 (1 volt peak-to-peak, 1KHz) push on the speaker switch. The output level should go to 8 volts p-p before clipping. Check operation of the speaker switch. Verify that the speaker switch light is on bright when the speaker is pushed on and dim when the speaker switch is pushed off.

Connect an 8 ohm speaker to the POWER AMP OUT, J1.

Set SPKR switch to OFF position. Turn on DIP switch S1-3 (AUTO SPKR ON). Press the 810B test fixture call button #1. As you press button #1, switch #1 on the 810B being tested should brighten. Turn up volume pot to hear the 1,000 Hertz tone through the external speaker and see the SPKR SW light on the 810B brighten. Release the test fixture call button and the tone should stop. The speaker and channel switches on the 810B being tested should dim.

Repeat for all channels.

5.4.7 Auto Speaker ON Function

Turn on dip switch #4 (AUTO MIC ON) and push off the MIC switch on the front panel. Now, when depressing a talk channel button on the front panel, the mic circuit should enable and the MIC ON button should brighten.

5.4.8 Speaker Dim (R86)

In a squawk style 810B, set dip switch S1-1 on. Push on the SPEAKER switch and put a 1 KHz tone through the speaker. Increase the speaker volume until 0 dBm is achieved. Push on the front panel MIC button and adjust the speaker dim pot for -10dBm.

In a conference 810B unit, set dip switch S1-2 on. Push on the SPEAKER switch and put a 1 KHz tone through the speaker. Increase the speaker volume until 0 dBm is achieved. Push on the ALL TALK button on the front panel and adjust the speaker dim pot for -20dBm.

5.4.9 Headphone Amp

Set the meter/scope switch to HP. Put a scope probe across J103 pins 6 and 19. Increase the volume control and check for headphone signal output of 8 volts peak to peak before clipping occurs. Set the test fixture METER/SCOPE switch to HP. Increase the volume control until clipping occurs on the headphone output. The headphone level should be 8 volts peak to peak before clipping.

5.4.10 Listen In/Talk Out Jumpers

If jumper W2 (listen out) is installed in the 810B, verify that the signal level between pins 6 and 19 of J103 is the same as the headphone output. If jumper W1 (talk out) is installed in the 810B, the signal between pins 6 and 19 of J103 should be fixed at 6 volts peak to peak. Only one jumper (W1 or W2) should be installed at a time. W2 is normally installed in standard units.

5.4.11 Continuity Checks

Check with an ohm meter, at J109 pins 9 through 19 for continuity with the dynamic headphone connections on the front panel. Check continuity at J109 with the panel MIC connections at J21 on PC board.

5.4.12 Logic Functions

Put a 1000 Hertz signal through the speaker. Switch front-panel SPKR switch to OFF. Short the terminals of SPKR ON/OFF CONTROL (pins 5 and 18 of J103). The speaker output should come on and the speaker switch should brighten. Remove the short. The speaker switch should dim and the speaker quiet.

5.4.13 Final Adjustments

In a Squawk style unit, the following dip switches are selected ON = Switches S1-1, S1-3 & S1-4. Switch S1-2 is off.

In a conference 810B unit, dip switch S1-1 is on. Switches S1-2, S1-3 & S1-4 are off.

For special 810B units, check the schematic for your unit as to the selection of dip switch functions.

In a mixed Squawk/CONF style 810B unit, the following dip switches are selected ON = Switches S1-2, S1-3 & S1-4. Switch S1-1 is off.

For Squawk style 810B, select one Listen channel desired on your 810B. Use only one bilat per 810B station. Put amber switch lens inside corresponding switch on your 810B. Put a jumper in J402 corresponding to the selected channel position.

SECTION 6: LISTS OF REPLACEABLE PARTS

6.1 Introduction

This section contains parts lists, and instructions for ordering replacement parts. The Parts List is divided into sub-parts lists, listed below in 6.1.1 Division of Parts Lists. Immediately following the description of a part is the manufacturer and the manufacturer's part number. At the back of this section in Charts 6-1 and 6-2 are materials that relate to Federal Supplier Cage Codes for each manufacturer.

6.1.1 Division Of Parts List Into Sub-Parts Lists

Model 810B

6.4 Final Assembly, Model 810B	9010-5729-00
6.5 Rear Panel Assembly, Model 810B	9020-5649-00
6.6 Chassis Assembly, Model 810B	9090-5728-00
6.7 Switch Board, Model 810B	9030-5606-00
6.8 Motherboard, Model 810B	9030-5732-00

Model 865

6.9 Final Assembly, Model 865	9010-2625-00
6.10 Final Assembly, Power Supply For Model 810B	9020-4309-00

6.2 How To Obtain Parts

Parts may be obtained directly from Telex Communications, Inc.:

Telex Communications, Inc.
9600 Aldrich Avenue South,
Minneapolis, MN 55420 U.S.A.
Telephone: (800) 828-6107
Fax: (800) 323-0498

6.3 Shipping List

6.3.1 Model 810B Shipping List

Qty	Description	RTS Part Number
1	Model 810B (w/gooseneck microphone)	9000-5729-00
1	Model 810B Shipping carton	
1	Power Supply Assembly	9020-4309-00
1	Service Manual	SM5729
1	Plastic bag	
1	25 pin "D" Connector Female with hood, Calrad 30-562	2004-0038-00
1	Cable Tie Panduit PLT2M	2516-0008-00

6.3.2 Model 865 Shipping List

Qty	Description	RTS Part Number
1	Model 865	9000-2625-00

6.4 Final Assembly, Model 810B -- 9010-5729-00

Qty	Description	RTS Part Number
1	Washer, nylon shoulder Smith P/N 2668	1006-0004-00
4	Washer, lock #8, internal tooth	1006-0027-00
4	Nut, Hex Kep 6-32	1007-0002-00
4	Screw, 4-40 x 1/4" Pan HD, Phil, Yel Cad	1008-4023-00
4	Screw, 6-32 x 3/8" Bind Hd, Phil, Cad	1008-6013-00
4	Screw, 8-32 x 1/2" Pan Hd, Phil, Yel Cad	1008-8025-00
A/R	Shrink sleeving, 1/4" Blk Fit221	1301-0001-00
11	Jumper - Gold Plate Berg 65474-001	2007-0042-00
A/R	Cable, 2 Cond Shielded Low noise, Belden 9452	2503-0004-00
A/R	Wire, 24 Awg Blk/White, Twisted Pr, IPVC UL1007	2506-0003-00
14	Lens Cap, Flat Clear EAO 99-921.7	2705-0005-00
14	Legend Plate, Flat Wh. EAO 99-908.9	2708-0011-00
1	Fuse, 2 Amp Slo-Blo Bushman MDL-2	2801-0009-00

6.5 Rear Panel Assembly, Model 810B -- 9020-5649-00

Qty	Description	RTS Part Number
2	Lug, solder #6 Smith 1416-6	1003-0003-00
1	Cable MTG Cradle Panduit TM1S4	1005-0046-00
3	Jack Socket, 3/8", RAF 47504	1005-0193-00
2	Nut, Hex Kep 4-40 Cad Plated	1007-0001-00
1	Screw, 4-40 x 1/2" Pan Hd, Phil, Yel Cad	1008-4025-00
1	Conn. 4 Pin Female Molex 09-05-3041	2006-0013-00
4	Conn. Pin Fem. Crimp Molex 08-50-0106	2006-0016-00
1	Conn. 25 pin "D" Male 3M 8225-6000	2008-0018-00
1	Conn. 26 Pin Female 3M 3399-6026	2008-0033-00
1	Jack, 4 Conductor Calrad 30-454	2013-0005-00
A/R	Cable, 26 Pin Flat Spectra 8431352801026	2501-0011-00
A/R	Wire, 18 Awg Brown 19 Strand, Teflon Roll	2511-0107-00
A/R	Wire, 18 Awg Green 19 Strand, Teflon Roll	2511-0304-00
A/R	Wire, 18 Awg, Red 19 Strand, Teflon Roll	2511-0305-00
A/R	Wire, 18 Awg, Black 19 Strand, Teflon Roll	2511-0319-00
1	Cable Assembly, 810BA/810B	9020-5687-00
3	Conn, 10 Pin 3M 3473-6010	2007-0038-00
1	Conn. 50 Pin Male 3M 3564-1002	2008-0011-00
1	Conn. 20 Pos w/S.R. Berg 66900-020	2008-0015-00
1	Ribbon Cable 50 Cond Spectra 8431352801050	2501-0001-00
1	Back Panel, 810B Fab Per Dwg FD5649	9080-5649-00
5	Spacer, hex 6-32 x 5/8" Smith 8836	1001-0045-00
2	Nut, Hex Kep 4-40 Cad Plated	1007-0001-00
2	Screw, 4-40 x 1/2" Fl Hd, Phil, Wh Zinc	1008-4015-00
5	Screw, 6-32 x 1/4" Phil, Pan Hd, Ylw Cad	1008-6038-00
A/R	Shrink Sleeving, 1/4" Blk FIT221	1301-0001-00
A/R	Shrink Sleeving, 3/16" Blk FIT221 3/16"	1301-0005-00

6.6 Chassis Assembly, Model 810B -- 9020-5728-00

Qty	Description	RTS Part Number
1	Pot, Audio 10K, 1 1/8 AB 0J1N108S103A	1406-0041-00
2	Conn. 4 Pin Female Molex 09-05-3041	2006-0013-00
9	Conn. Pin Crimp Term Molex 08-05-0108	2006-0014-00
1	Conn. Pin Fem. Crimp Molex 08-50-0106	2006-0016-00
1	Conn. 3 Pin Female Molex 09-50-3031	2006-0018-00
1	Conn. 4 Pin Female Cannon AXR 4-31	2018-0001-02
4	#73 Shield Bead Fairrite 267300601	2404-0001-00
1	Wire, 24 Awg, Brown Vinyl, Stranded, 5"	2511-0006-00
1	Wire, 24 Awg, Red Vinyl, Stranded, 5"	2511-0008-00
1	Wire, 24 Awg, Orange Vinyl, Stranded, 5"	2511-0036-00
1	Wire, 24 Awg, Yellow 5" Long	2511-0037-00
1	Wire, 24 Awg, Black Type Bn, Roll	2511-0341-00
1	Wire, 24 Awg, Red Type Bn, Roll	2511-0342-00
1	Wire, 24 Awg, Orange Type Bn, Roll	2511-0344-00
1	Mic, Gooseneck 20" Shiba LR-420	2608-0025-00
1	Windscreen, LR412/420 Shiba 16-5/G	2612-0121-00
1	Knob, Gray 1/4" Shaft, Selco S210-250	2703-0005-00
1	Cap, Gray w/Dot Selco, C212	2705-0003-00
19	Ext. Side 10' x 1 3/4 Die 3780 Mat'L 6063T6	9050-1587-00
19	Ext. Front 12' x 1 3/4 Die 3854 Alloy 6063T5	9050-1628-00

6.7 Switch Board, Model 810B -- 9030-5606-00

Qty	Description	RTS Part Number
12	Coupling Piece EAO 99-910	1005-0033-00
14	Lamp, 18 volt JKL 8099SBP	1802-8099-00
11	Switch, EAO 99-456 Momentary Lighted P/B	1911-0013-00
3	Switch, EAO 99-486 Alt., Lighted, P/B	1911-0026-00
3	Header, 20 Pin, "Long" Berg 68691-420	2007-0125-00
14	Switch Lens Holder, Gray EAO 99-920.8	2711-0001-00

6.8 Printed Circuit Assembly, Motherboard, Model 810B -- 9030-5732-00

Ref	Description	RTS Part Number
PC1	Printed Circuit Board	9040-5602-00
C1	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C2	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C3	Capacitor, electro, 2.2 uf/50 volts	1513-R225-41
C4	Capacitor, electro, 10uf/10 volts	1513-R106-4C
C5	Capacitor, electro, 10uf/10 volts	1513-R106-4C
C6	Not used	
C7	Capacitor, ceramic disc, radial 220pf/50 volts	1520-R221-1I
C8	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C9	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C10	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C11	Capacitor, electro 47uf/16 volts	1513-R476-4E
C12	Capacitor, ceramic mono, radial .022uf/100volts	1514-R223-2I
C13	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I

6.8 Printed Circuit Assembly, Motherboard, Model 810B – 9030-5732-00

Ref	Description	RTS Part Number
C14	Capacitor, cermamic diac, radial 100pf/1k volts	1510-R101-2R
C15	Capacitor, ceramic mono, radial .2uf/50volts	1511-R204-2I
C16	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C17	Not used	
C18	Capacitor, tantalum, radial 1uf/35 volts	1515-R105-3G
C19	Not used	
C20	Not used	
C21	Capacitor, ceramic disc, radial .0022uf/100v	1514-2222-2L
C22	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C23	Capacitor, nylar, radial .001uf/100 volts	1514-R102-2L
C24	Not used	
C25	Capacitor, electro radial 10uf/25 volts	1513-R106-4F
C26	Capacitor, ceramic mono, radial .2uf/50v	1511-R204-2I
C27	Capacitor, electro 10uf/16 volts	1513-R106-4E
C28	Capacitor, electro .01uf/50 volts	1511-R103-2I
C29	Not used	
C30	Not used	
C31	Capacitor, electro 47uf/16 volts	1513-R476-4E
C32	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C33	Capacitor, tantalum, radial 1uf/35 volts	1515-R105-3G
C34	Capacitor, electro 470uf/16 volts	1513-R477-4E
C35	Not used	
C36	Capacitor, elctro radial 1000uf/16 volts	1513-R108-4E
C37	Not used	
C38	Capacitor, electro 10uf/16 volts	1513-R106-4E
C39	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C40	Capacitor, mono .033uf/50 volts	1511-R333-2I
C41	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C42	Not used	
C43	Not used	
C45	Capacitor, electro 10uf/16 volts	1513-R106-4E
C46	Not used	
C47	Not used	
C48	Capacitor, mylar, radial .1uf/250 volts	1514-R104-2I
C49	Not used	
C50	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C51	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C52	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C53	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C54	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C55	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C56	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C57	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C58	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C59	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C60	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
C61	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C62	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C63	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C64	Capacitor, Poly Film 1uf/50 volts	1523-R105-23
C65	Capacitor, electro 470uf/16 volts	1513-R477-4E
C66	Capacitor, electro 10uf/16 volts	1513-R106-4E
C67	Capacitor, tantalum, radial 1uf/35 volts	1515-R105-3G
C68	Capacitor, ceramic mono, radial .2uf/50v	1511-R204-2I
C69	Capacitor, Poly Film 1uf/50 volts	1523-R105-23
C70	Capacitor, elctro radial 1000uf/16 volts	1513-R108-4E
C71	Capacitor, ceramic mono, radial .022uf/100v	1514-R223-2I
C110	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C111	Capacitor, electro 1/50 volts	1513-R105-4I
C112	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C113	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C120	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C121	Capacitor, electro 1/50 volts	1513-R105-4I
C122	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C123	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C130	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C131	Capacitor, electro 1/50 volts	1513-R105-4I
C132	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C133	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C140	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C141	Capacitor, electro 1/50 volts	1513-R105-4I
C142	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C143	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C150	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C151	Capacitor, electro 1/50 volts	1513-R105-4I
C152	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C153	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C160	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C161	Capacitor, electro 1/50 volts	1513-R105-4I
C162	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C163	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C170	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C171	Capacitor, electro 1/50 volts	1513-R105-4I
C172	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C173	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C180	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C181	Capacitor, electro 1/50 volts	1513-R105-4I
C182	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C183	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C190	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C191	Capacitor, electro 1/50 volts	1513-R105-4I
C192	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
C193	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C200	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C201	Capacitor, electro 1/50 volts	1513-R105-4I
C202	Capacitor, ceramic disc, radial 33pf/50 volts	1510-R330-2I
C203	Capacitor, electro, 47uf/10 volts	1513-R476-4C
C204	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C205	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C206	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C207	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C300	Not used	
C301	Not used	
C302	Capacitor, ceramic disc .01uf/1kv	1510-R103-2R
C303	Capacitor, ceramic disc .01uf/1kv	1510-R103-2R
C304	Capacitor, ceramic disc .01uf/1kv	1510-R103-2R
C305	Capacitor, ceramic disc .01uf/1kv	1510-R103-2R
C306	Capacitor, electro, axial 2200uf/25	1513-A228-4F
C307	Capacitor, electro, axial 2200uf/25	1513-A228-4F
C308	Capacitor, electro, axial 2200uf/25	1513-A228-4F
C309	Capacitor, electro 1000uf/16V	1513-R108-4E
C310	Capacitor, ceramic mono, radial .2uf/50v	1511-R204-2I
C311	Capacitor, ceramic mono, radial .2uf/50v	1511-R204-2I
C312	Capacitor, electro 1000 uf/16V	1513-R108-4E
C400	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C401	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C402	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C403	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C404	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
C405	Capacitor, ceramic mono, radial .1uf/50 volts	1511-R104-2I
D1	Diode, 1N6263	1601-6263-00
D2	Diode, 1N6263	1601-6263-00
D3	Diode, 1N4004	1601-4004-00
D4	Diode, 1N4004	1601-4004-00
D5	Diode, 1N6263	1601-6263-00
D6	Diode, 1N4004	1601-4004-00
D7	Diode, 1N4004	1601-4004-00
D8	Diode, 1N4004	1601-4004-00
D8	Diode, 1N4004	1601-4004-00
D9	Not used	
D10	Not used	
D11	Not used	
D12	Not used	
D13	Not used	
D14	Diode, 1N4004	1601-4004-00
D15	Diode, 1N914B	1601-0914-0B
D16	Diode, 1N4004	1601-4004-00

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
D17	Diode, 1N4004	1601-4004-00
D18	Diode, 1N4004	1601-4004-00
D19	Diode, 1N4004	1601-4004-00
D20	Diode, 1N4004	1601-4004-00
D101	Diode, 1N4004	1601-4004-00
D102	Diode, 1N4004	1601-4004-00
D103	Diode, 1N4004	1601-4004-00
D104	Diode, 1N4004	1601-4004-00
D105	Diode, 1N4004	1601-4004-00
D106	Diode, 1N4004	1601-4004-00
D107	Diode, 1N4004	1601-4004-00
D108	Diode, 1N4004	1601-4004-00
D109	Diode, 1N4004	1601-4004-00
D110	Diode, 1N4004	1601-4004-00
D201	Diode, MR502	1601-05022-00
D202	Diode, MR502	1601-05022-00
D203	Diode, MR502	1601-05022-00
D204	Diode, MR502	1601-05022-00
D205	Diode, MR502	1601-05022-00
D206	Diode, MR502	1601-05022-00
D207	Diode, MR502	1601-05022-00
D208	Diode, MR502	1601-05022-00
D209	Diode, MR502	1601-05022-00
D301	Diode, 1N4004	1601-4004-00
D302	Diode, 1N4004	1601-4004-00
D303	Diode, 1N4004	1601-4004-00
D304	Diode, 1N4004	1601-4004-00
D305	Diode, 1N4004	1601-4004-00
D306	Diode, 1N4004	1601-4004-00
D307	Diode, 1N4004	1601-4004-00
D308	Diode, 1N4004	1601-4004-00
D309	Diode, 1N4004	1601-4004-00
D110	Diode, 1N4004	1601-4004-00
D311	Diode, 1N4004	1601-4004-00
D312	Diode, 1N4004	1601-4004-00
D313	Diode, 1N4004	1601-4004-00
D314	Diode, 1N4004	1601-4004-00
D315	Diode, 1N4004	1601-4004-00
D316	Diode, 1N4004	1601-4004-00
D317	Diode, 1N4004	1601-4004-00
D318	Diode, 1N4004	1601-4004-00
D319	Diode, 1N4004	1601-4004-00
D320	Diode, 1N4004	1601-4004-00
D321	Diode, 1N4004	1601-4004-00
D322	Diode, 1N4004	1601-4004-00
D326	Diode, 1N4004	1601-4004-00
D327	Diode, 1N4004	1601-4004-00
D328	Diode, 1N4004	1601-4004-00

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
D329	Diode, 1N4004	1601-4004-00
D330	Diode, 1N4004	1601-4004-00
D331	Diode, 1N4004	1601-4004-00
D332	Diode, 1N4004	1601-4004-00
D333	Diode, 1N4004	1601-4004-00
D334	Diode, 1N4004	1601-4004-00
D335	Diode, 1N4004	1601-4004-00
D336	Diode, 1N4004	1601-4004-00
D337	Diode, 1N4004	1601-4004-00
D338	Diode, 1N4004	1601-4004-00
D339	Diode, 1N4004	1601-4004-00
D340	Diode, 1N4004	1601-4004-00
D341	Diode, 1N4004	1601-4004-00
D342	Diode, 1N4004	1601-4004-00
D343	Diode, 1N4004	1601-4004-00
D344	Diode, 1N4004	1601-4004-00
D345	Diode, 1N4004	1601-4004-00
D346	Diode, 1N4004	1601-4004-00
D347	Diode, 1N4004	1601-4004-00
D348	Diode, 1N4004	1601-4004-00
D349	Diode, 1N4004	1601-4004-00
D350	Diode, 1N4004	1601-4004-00
D351	Diode, 1N4004	1601-4004-00
D352	Diode, 1N4004	1601-4004-00
D353	Diode, 1N4004	1601-4004-00
D354	Diode, 1N4004	1601-4004-00
D355	Diode, 1N4004	1601-4004-00
D356	Diode, 1N4004	1601-4004-00
D357	Diode, 1N4004	1601-4004-00
D358	Diode, 1N4004	1601-4004-00
D359	Diode, 1N4004	1601-4004-00
D360	Diode, 1N4004	1601-4004-00
D361	Diode, 1N4004	1601-4004-00
D362	Diode, 1N4004	1601-4004-00
D363	Diode, 1N4004	1601-4004-00
D364	Diode, 1N4004	1601-4004-00
D365	Diode, 1N4004	1601-4004-00
D366	Diode, 1N4004	1601-4004-00
D367	Diode, 1N4004	1601-4004-00
D368	Diode, 1N4004	1601-4004-00
D369	Diode, 1N4004	1601-4004-00
D369	Diode, 1N4004	1601-4004-00
D370	Diode, 1N4004	1601-4004-00
D371	Diode, 1N4004	1601-4004-00
D372	Diode, 1N4004	1601-4004-00
D373	Diode, 1N4004	1601-4004-00
D374	Diode, 1N4004	1601-4004-00
D375	Diode, 1N4004	1601-4004-00
D376	Diode, 1N4004	1601-4004-00
D377	Diode, 1N4004	1601-4004-00

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
D378	Diode, 1N4004	1601-4004-00
D379	Diode, 1N4004	1601-4004-00
D380	Diode, 1N4004	1601-4004-00
D381	Diode, 1N4004	1601-4004-00
D382	Diode, 1N4004	1601-4004-00
D383	Diode, 1N4004	1601-4004-00
D384	Diode, 1N4004	1601-4004-00
D385	Diode, 1N4004	1601-4004-00
D386	Diode, 1N4004	1601-4004-00
D386	Diode, 1N4004	1601-4004-00
D388	Diode, 1N4004	1601-4004-00
D389	Diode, 1N4004	1601-4004-00
D390	Diode, 1N4004	1601-4004-00
D391	Diode, 1N4004	1601-4004-00
D392	Diode, 1N4004	1601-4004-00
D393	Diode, 1N4004	1601-4004-00
D394	Diode, 1N4004	1601-4004-00
D395	Diode, 1N4004	1601-4004-00
D396	Diode, 1N4004	1601-4004-00
D397	Diode, MR502	1601-05022-00
D398	Diode, MR502	1601-05022-00
D399	Diode, MR502	1601-05022-00
D400	Diode, MR502	1601-05022-00
D401	Diode, 1N4004	1601-4004-00
D402	Diode, 1N4004	1601-4004-00
D403	Diode, 1N4004	1601-4004-00
D404	Diode, 1N4004	1601-4004-00
D405	Diode, 1N4004	1601-4004-00
D406	Diode, 1N4004	1601-4004-00
D407	Diode, 1N4004	1601-4004-00
D408	Diode, 1N4004	1601-4004-00
D409	Diode, 1N4004	1601-4004-00
D410	Diode, 1N4004	1601-4004-00
D411	Diode, 1N4004	1601-4004-00
D412	Diode, 1N4004	1601-4004-00
D413	Diode, 1N4004	1601-4004-00
D414	Diode, 1N4004	1601-4004-00
D415	Diode, 1N4004	1601-4004-00
XF301	Fuse holder, PCBMNT.66, Schurter FAU 031.3577	2802-0011-01
J1	Carbon Mic Jack, RN114BPC	2013-0040-00
J2	Not Used	
J3	Header Berg 65611-420, 20 pin	9020-5841-20
J4	Header Berg 65611-420, 26 pin	9020-5841-20
J5	Not used	
J6	Not used	
J7	Not used	
J7	Not used	
J8	Not used	

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
J9	Not used	
J10	Not used	
J11	Not used	
J12	Not used	
J13	Not used	
J14	Not used	
J15	Not used	
J16	Not used	
J17	Header, Berg 65611-410	9020-5841-10
J18	Header, Berg 65611-410	9020-5841-10
J19	Not used	
J20	Not used	
J21	Conn, molex 09-74-1041, 4pin	2006-0068-00
J22	Conn, molex 09-74-1041, 4pin	2006-0068-00
J23	Conn, molex 09-74-1041, 4pin	2006-0068-00
J24	Conn, molex 09-74-1031, 3 pin	2006-0069-00
J25	Header, Berg 65000-210, 20 pin	2004-0039-00
J26	Conn, molex 09-74-1031, 3 pin	2006-0069-00
J27	Header, Berg 65611-410	9020-5841-10
J28	Not used	
J29	Not used	
J30	Header, Berg 65000-210, 20 pin	2004-0039-00
J31	Header, Berg 65000-21,0 20 pin	2004-0039-00
J32	Not used	
J33	Header, Berg 65611-420, 20 pin	9020-5841-20
J401	Header, Berg 65611-424, 24 pin	9020-5841-24
J401	Header, Berg 65611-424, 24 pin	9020-5841-24
Q1	Transistor, J305, siliconix	1602-0305-00
R1	Resistor CF 1/4w 5% 2.2 kilohms	1402-2201-5D
R2	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R3	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R4	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R5	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R6	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R7	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R8	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R9	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R10	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R11	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R12	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R13	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R14	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R15	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R16	Not used	
R17	Resistor CF 1/4w 5% 1 kilohms	1402-1001-5D
R18	Resistor CF 1/4w 5% 1 kilohms	1402-1001-5D
R19	Resistor CF 1/4w 5% 470 ohms	1402-4700-5D
R20	Resistor CF 1/4w 5% 470 ohms	1402-4700-5D

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
R21	Resistor CF 5% 1/2w 10 ohms	1402-10R0-5E
R22	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R23	Not used	
R24	Resistor CF 1/4w 5% 3.3 kilohms	1402-3301-5D
R25	Resistor CF 1/4W 5% 68 kilohms	1402-6802-5D
R26	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R27	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R28	Resistor CF 1/4w 5% 220 kilohms	1402-2203-5D
R29	Resistor CF 1/4w 5% 100 kilohms	1402-1003-5D
R30	Not used	
R31	Resistor CF 1/4w 5% 56 kilohms	1402-5602-5D
R32	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R33	Resistor CF 1/4w 5% 5.1M ohms	1402-5104-5D
R34	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R35	Resistor CF 1/4w 5% 240 ohms	1402-2400-5D
R36	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R37	Resistor CF 1/4w 5% 100 kilohms	1402-1003-5D
R38	Not used	
R39	Not used	
R40	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R41	Resistor CF 1/4w 5% 240 ohms	1402-2400-5D
R42	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R43	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R44	Not used	
R45	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R46	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R47	Not used	
R48	Pot Audio clarostat G6835 10 kilohms	1406-0032-00
R49	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R50	Not used	
R51	Not used	
R52	Resistor CF 1/4w 5% 2.2 kilohms	1402-2201-5D
R53	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R54	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R55	Not used	
R56	Not used	
R57	Not used	
R58	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R59	Resistor CF 1/4w 5% 680 ohms	1402-6800-5D
R60	Resistor CF 1/4w 5% 220 kilohms	1402-2203-5D
R61	Not used	
R62	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R63	Not used	
R64	Resistor CF 1/4w 5% 4.7 ohms	1402-4R70-5D
R65	Resistor CF 1/4w 5% 1 kilohms	1402-1001-5D
R66	Resistor CF 1/4w 5% 39 ohm	1402-39R0-5D
R67	Not used	
R68	Not used	
R69	Not used	
R70	Not used	

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
R71	Not used	
R72	Not used	
R73	Not used	
R74	Not used	
R75	Resistor CF 1/2w 5% 100 ohms	1402-1000-5E
R76	Resistor CF 1/4w 5% 120 ohms	1402-1200-5D
R77	Resistor CF 1/4w 5% 220 ohms	1402-2200-5D
R78	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R79	Resistor CF 1/4w 5% 220 kilohms	1402-2203-5D
R80	Pot, trim linear Piher PTC10LVP500KA 500 kilohms	1409-0038-00
R82	Resistor CF 1/4w 5% 20 kilohms	1402-2002-5D
R83	Not used	
R84	Not used	
R85	Pot, Trim Audio Piher PT10VVP20KA 20 kilohms	1409-0047-00
R86	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R87	Resistor CF 1/4w 5% 1 kilohms	1402-1001-5D
R88	Resistor CF 1/4w 5% 39 ohm	1402-39R0-5D
R89	Resistor CF 1/4w 5% 1 kilohms	1402-1001-5D
R90	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R91	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R92	Optional	
R110	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R111	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R112	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R113	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R114	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R115	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R116	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R117	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R120	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R121	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R122	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R123	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R124	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R125	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R126	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R127	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R130	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R131	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R132	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R133	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R134	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R135	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R136	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R137	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R140	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R141	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R142	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R143	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R144	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
R145	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R146	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R147	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R150	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R151	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R152	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R153	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R154	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R155	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R156	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R157	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R160	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R161	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R162	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R163	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R164	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R165	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R166	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R167	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R170	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R171	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R172	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R173	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R174	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R175	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R176	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R177	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R180	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R181	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R182	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R183	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R184	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R185	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R186	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R187	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R190	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R191	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R192	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R193	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R194	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R195	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R196	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R197	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R200	Pot Trim Piher PT10Lvp10K 10 kilohms	1409-0009-00
R201	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R202	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R203	Resistor MF 1/4w 1% 60.4 kilohms	1403-6042-2D
R204	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D
R205	Resistor MF 1/4w 1% 20 kilohms	1403-2002-2D

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
R206	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R207	Pot Trim linear cermet ,PTC10LVP20KA 20 kilohms	1409-0052-00
R208	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R209	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R210	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R211	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R212	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R213	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R214	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R215	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R216	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R217	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R218	Not used	
R219	Not used	
R220	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R301	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R302	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R303	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R304	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R305	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R306	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R307	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R308	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R309	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R310	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R311	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R312	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R318	Resistor CF 1/4w 5% 2.2 kilohms	1402-2201-5D
R319	Resistor CF 1/4w 5% 240 ohms	1402-2400-5D
R320	Not used	
R321	Resistor MF 1/2w 5% .1 ohm	1413-0R10-5E
R322	Resistor CF 1/4w 5% 100 ohms	1402-1000-5D
R323	Resistor CF 1/4w 5% 22 ohms	1402-22R0-5D
R400	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R401	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R402	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R403	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R404	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R405	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R406	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R407	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R408	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R409	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R410	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R411	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R412	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R413	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
R414	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R415	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R416	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R417	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R418	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R419	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R420	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R421	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R422	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R423	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R424	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R425	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R426	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R427	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R428	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R429	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R430	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R431	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R432	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R433	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R434	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R435	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R436	Resistor CF 1/4w 5% 22 kilohms	1402-2202-5D
R437	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R438	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
R439	Resistor CF 1/4w 5% 100 kilohms	1302-1003-5D
S1	Switch Dip AM Research K40-8	1909-0002-00
T1	Not used	
T2	Not used	
T3	Optional (use LM9003)	
T4	Transformer LM9003	2306-0001-00
T5	Transformer LM9003	2306-0001-00
T6	Not used	
T7	Not used	
T8	Not used	
T9	Not used	
T10	Not used	
T11	Transformer LM9003	2306-0001-00
T12	Transformer LM9003	2306-0001-00
T13	Transformer LM9003	2306-0001-00
T14	Transformer LM9003	2306-0001-00
T15	Transformer LM9003	2306-0001-00
T16	Transformer LM9003	2306-0001-00
T17	Transformer LM9003	2306-0001-00
T18	Transformer LM9003	2306-0001-00
T19	Transformer LM9003	2306-0001-00
T20	Transformer LM9003	2306-0001-00

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
U1	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U2	I.C., Voltage Reg. TL317C, LM317LZ	1603-0317-00
U3	I.C., NE5532N, Signetics	1603-5532-ON
U4	I.C., NE5532N, Signetics	1603-5532-ON
U5	Not used	
U6	I.C., LM380N-8, National	1603-0380-00
U7	No used	
U8	I.C., Transistor, LM383A-T01, National	1603-0383-AT
U9	I.C., Transistor, LM383A-T01, National	1603-0383-AT
U10	Not used	
U11	I.C., NE5532N, Signetics	1603-5532-ON
U12	I.C., NE5532N, Signetics	1603-5532-ON
U13	I.C., NE5532N, Signetics	1603-5532-ON
U14	I.C., NE5532N, Signetics	1603-5532-ON
U15	I.C., NE5532N, Signetics	1603-5532-ON
U16	I.C., NE5532N, Signetics	1603-5532-ON
U17	I.C., NE5532N, Signetics	1603-5532-ON
U18	I.C., NE5532N, Signetics	1603-5532-ON
U19	I.C., NE5532N, Signetics	1603-5532-ON
U20	I.C., NE5532N, Signetics	1603-5532-ON
U21	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U22	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U23	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U24	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U301	I.C., Voltage Reg. LM317T, National	1603-0317-0T
U302	I.C., UA78L06ACLP, Texas Instruments	1603-0066-00
U401	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U402	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U403	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U404	I.C., Analog switch RCA, CD4053BE	1603-4053-BE
U405	I.C., 4503	1603-4503-00
U406	I.C., 4503	1603-4503-00
W1	Optional	
W2	Jumper, AP# 923345-04	2515-0004-04
W3	Normally not installed	
W110	Optional	
W111	Jumper AP# 923345-01	2515-0004-01
W120	Optional	
W121	Jumper AP# 923345-01	2515-0004-01
W130	Optional	
W131	Jumper AP# 923345-01	2515-0004-01
W140	Optional	
W141	Jumper AP# 923345-01	2515-0004-01
W150	Optional	
W151	Jumper AP# 923345-01	2515-0004-01
W160	Optional	
W161	Jumper AP# 923345-01	2515-0004-01

6.8 Printed Circuit Assembly, Motherboard, Model 810B 9030-5732-00

Ref	Description	RTS Part Number
W170	Optional	
W171	Jumper AP# 923345-01	2515-0004-01
W180	Optional	
W181	Jumper AP# 923345-01	2515-0004-01
W190	Optional	
W191	Jumper AP# 923345-01	2515-0004-01
W200	Optional	
W201	Jumper AP# 923345-01	2515-0004-01
XU1	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU2	No socket	
XU3	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU4	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU5	Not used	
XU6	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU7	Not used	
XU8	Heatsink, Aham 7-361-BA	4502-0007-00
XU9	Heatsink, Aham 7-361-BA	4502-0007-00
XU10	Not used	
XU11	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU12	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU13	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU14	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU15	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU16	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU17	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU18	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU19	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU20	I.C. Socket Burndy DIL8P-108, 8 pin	2001-0001-00
XU21	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU22	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU23	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU24	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU30	Heatsink, IERC 439-T0220	4502-0015-00
XU302	Not used	
XU401	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU402	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU403	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU404	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU405	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
XU406	I.C. Socket Burndy DIL16P-108, 16 pin	2001-0003-00
	Pem Fasteners PEM KF2-440, 4.40	1005-0114-00
	Washer Compression MOTB52200F006	1006-0041-00
	Nut, Radio HEX 4-40 Clear Cad	1007-0007-00
	Screw 4-40 x 3/8" 100 de. FL HD, C/R, Br Wh Zinc	1008-4012-00

6.9 Model 865 Final Assembly

Qty	Description	RTS Part Number
4	Spacer, hex 6-32 x 9/16" Amatom 8216-A-0632	1001-0023-00
2	Screw, 4-40 x 1/4" slot	1008-4019-00
4	Screw, 8-32 x 3/4" pan hd, phil, black	1008-8009-00
4	Screw, 8-32 x 3/4" flat hd, phil, black ox	1008-8010-01
8	Spacer, hex 6-32 x 1 1/2" Smith, 8429	1001-0006-00
8	Washer, flat 6-32 Nylon Smith, 2515	1006-0019-00
	Nut, kep, 4-40	
24	Screw, 4-40 x 3/8" pan, hd, slot, cad	1008-4005-00
8	Thumbscrew 6-32 x 1/2" Smith 2366	1008-6002-00
8	Screw, 6-32 x 3/8" slot, pan hd	1008-6022-00
10	Resistor, CF, 1/4 W, +5%, 200 ohm	1402-2000-5D
1	Conn, female 50 pin Amph. 57-20500-6	2008-0002-00
1	Cable assembly	9020-2622-00
20	Connector, 10 pin 3M 3473-6010	2007-0038-00
1	Connector, 50 pin male 3M 3564-1002	2008-0011-00
11	Connector, 50 pin female 3M 3565-1000A	2008-0013-00
1	Ribbon cable 50 cond Spectra 8431352801050	2501-0001-00
1	Back panel	9080-2619-00
4	Conn. stab. plate	9100-1942-00
1	Terminating plug assembly	9020-2919-00
10	Resistors, CF, ±5%, 1/4 W 200 ohm	1402-2000-5D
1	Connector 50 pin female 3M 3565-1000A	2008-0013-00
20	10 pin header Berg 6510-410	2007-0033-00
1	PCB, model 865	9040-2608-00
1	Front panel	9070-2512-00
2	Side rail, VIE306	9100-1835-01
1	Top cover	9100-1837-00
1	Bottom cover	9100-2618-00

6.10 Final Assembly, Power Supply, Model 810B 9020-4309-00

Qty	Description	RTS Part Number
1	Jack, 4 cond. female Calrad 30-453	2013-0016-00
1	Power Supply, 12 VAC, Condor WP572412	2202-0011-00

SECTION 7: MODEL 865 DESCRIPTION

7.1 Description

The Model 865 is an electronic component used to allow the 810 Master Stations to have a cross connect tally feature. This feature is only available when the 810 stations are used in a squawk system arrangement.

The Model 865 is a passive unit, containing all of the connections and signal routing necessary to create the tally feature. There are no active electronics on the single circuit board, and a power supply is not required to operate the unit.

All of the audio signals are bussed from connector to connector. All of the logic signals that constitute the tallys are cross connected on the printed circuit board; this matrixing of signals requires all 810's to be connected to their respective address connectors on the 865. For example, if an 810 is set to receive signals on switch position #4, then it must be plugged into J4 on the 865.

Since a system termination plug is required to establish the correct audio line impedance, a 200 ohm plug is supplied with each unit. Plug this terminating plug into J12 on the back of the 865.

7.2 Connections

Located on the rear panel are all of the connector locations. Connectors J1 through J10 correspond to Master Stations 1 through 10. These connectors are 50-pin females. Connector J11 is also a female 50-pin connector and is used to provide an interface with outside systems. The last connector, J12, is a 50 pin male connector and is the location for the system termination plug.

7.3 Physical Installation

The Model 865 is designed to mount in a standard EIA 19" equipment rack. Securely fasten the 865 to the rack using 4 screws placed through the front panel mounting holes.

The 865 can be placed anywhere in a rack; however, by choosing a central location between the Model 810 Master Stations cable lengths can be minimized.

7.4 Cables

Remove the cable keepers from the back panel by unscrewing the thumbscrews. Plug the cables into the appropriate connector locations. The J1 through J10 designations refer to the Model 810 Master Station receive address numbers.

It is important to insure a secure connection between the cables and the connectors. Gently wiggle each cable to make sure it is in place. When all of the cables have been connected, replace the cable keepers. (It may be necessary to use a piece of rubber or other flexible material.

7.5 System Termination Plug

The Model 810 Intercommunication System needs to have the channels terminated in order to establish the proper 200 ohm line impedance. A 200 ohm System Termination Plug is supplied with the Model 865 for this purpose. Insert the termination plug into the J12 connector on the back panel of the Model 865.

When exceptionally long cable runs are used, or when an 800 ohm line impedance is desired, use an 820 ohm System Termination Plug. This part may be ordered directly from RTS Systems, The part number is 9020-2919-01.

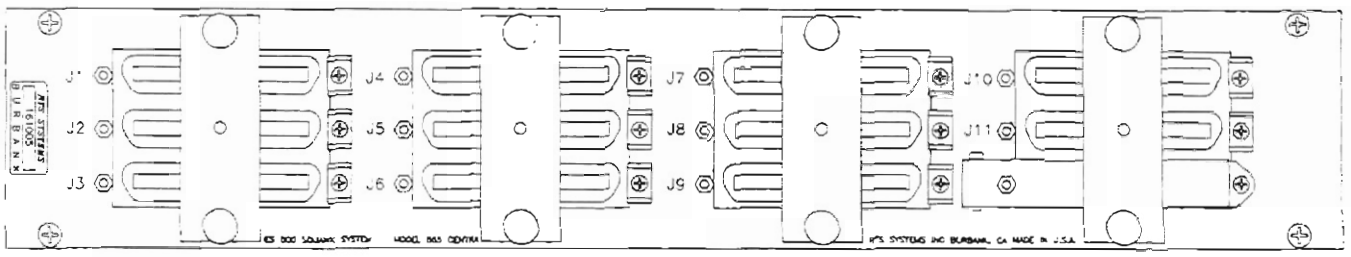
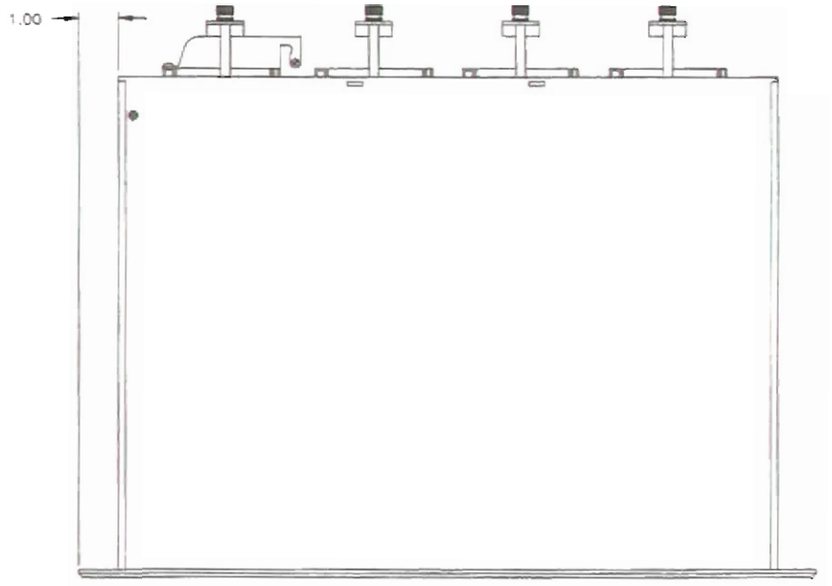
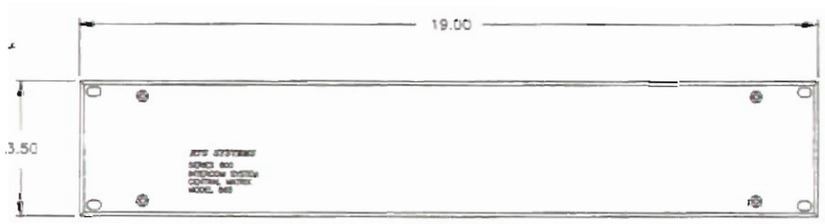


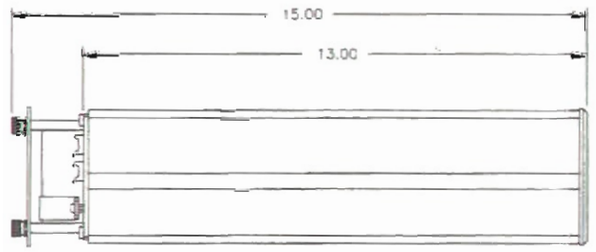
Figure 7-1
Model 865 Back Panel

SECTION 8: LIST OF DIAGRAMS

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	REVISED & REDRAWN WITH NO CHANGES	4/18/90	





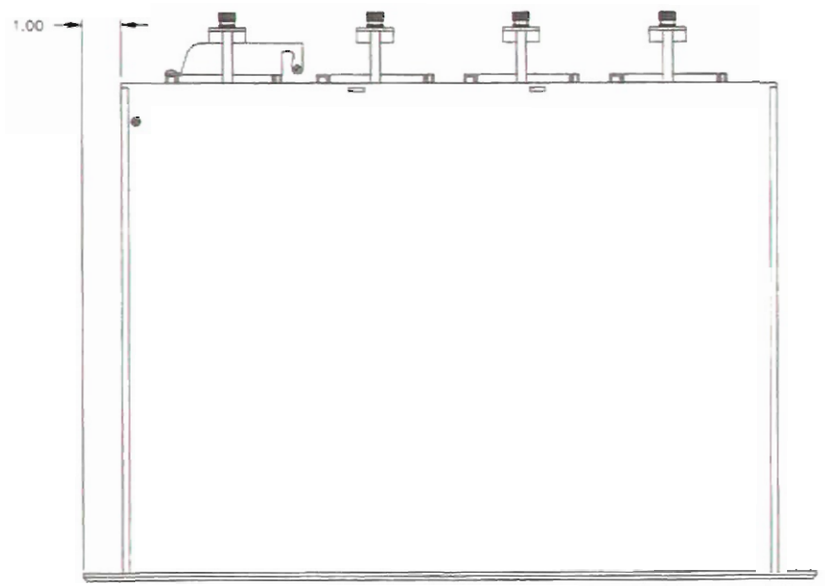


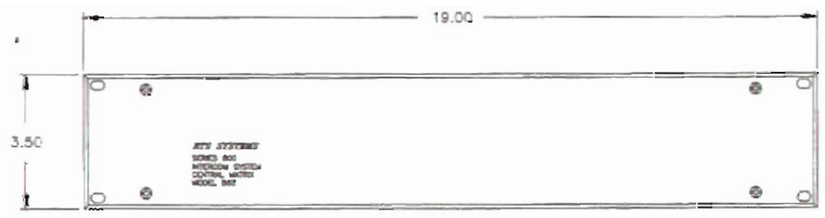
WEIGHT: 7.8LBS , 3.42Kg

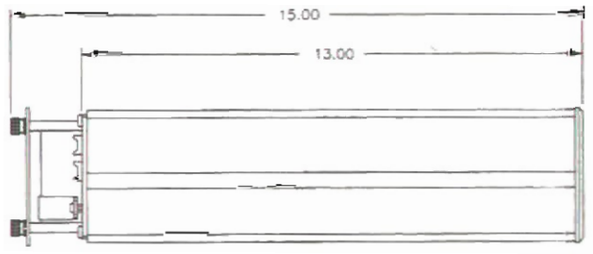
OD2625
Outline Drawing, Model 865

UNLESS OTHERWISE SPECIFIED: REMOVE ALL BURRS & BREAK SHARP EDGES; HOLE TOLERANCES PER ANSI B94.11-1967, STD#2; DIMENSIONS ARE IN INCHES; TOLERANCES ARE: FRACTIONS ±1/16, DECIMALS .X ±.060 .XX ±.030 .XXX ±.010, ANGLES ±30'	CONTRACT NO.	RTS SYSTEMS	BURBANK, CALIFORNIA, USA
	APPROVALS / DATE	OUTLINE DRAWING, MODEL 865 CENTRAL MATRIX	
	DRAWN R.NEILSON 4/18/90		
	CHECKED		
NEXT ASSY / USED ON	ISSUED	SIZE D / FSCM NO. 60572 / DWG NO. OD2625 / REV A	
MATERIAL / FINISH / APPLICATION		SCALE 1/2 / OD2625A01.DWG / SHEET 1 OF 1	

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	REVISED & REDRAWN WITH NO CHANGES	4/18/90	



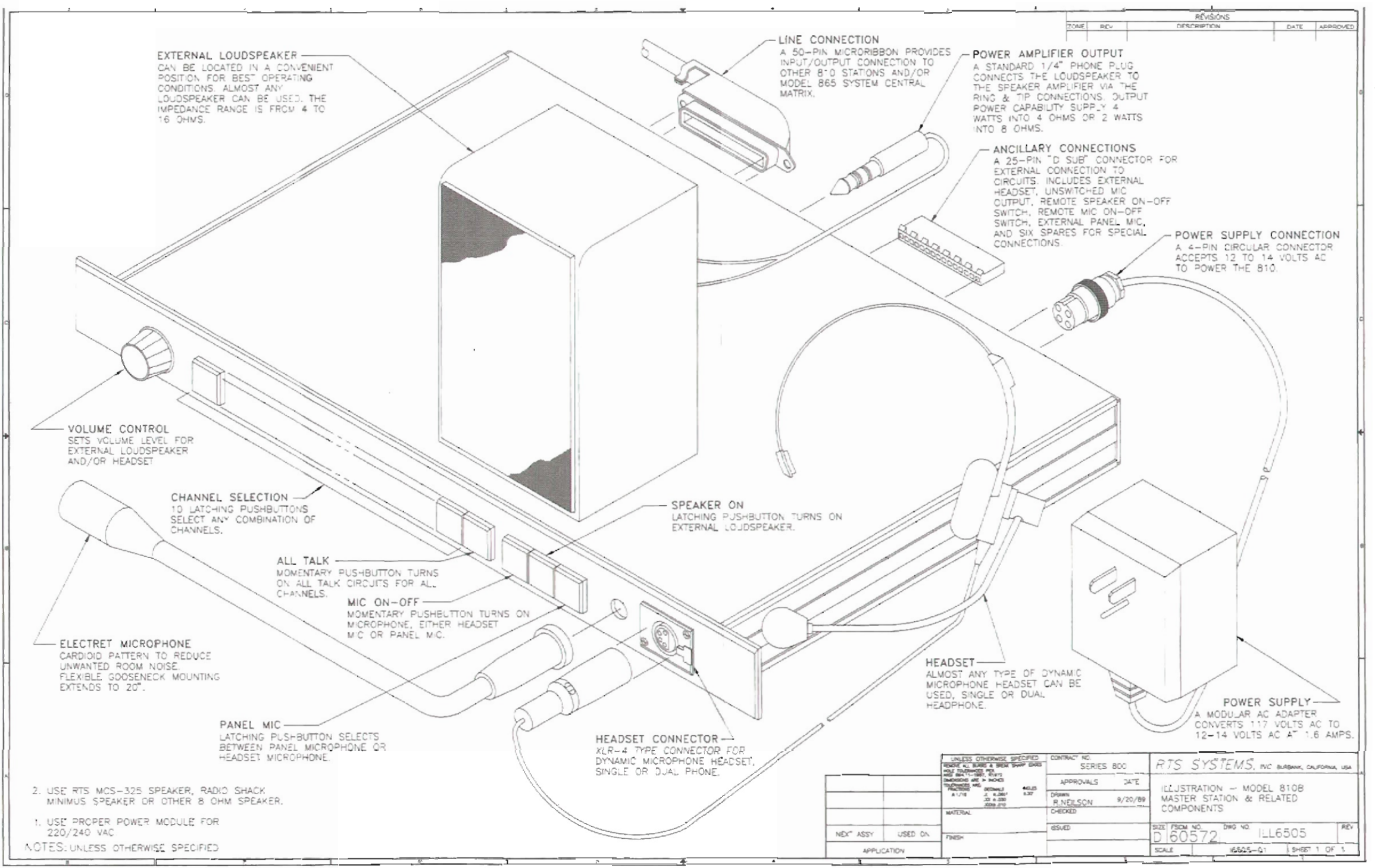


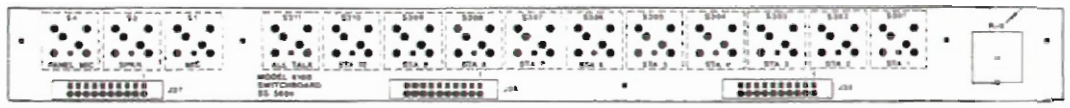


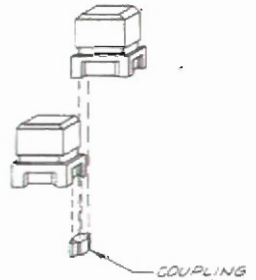
WEIGHT: 7.6LBS , 3.42Kg

OD2625
Outline Drawing, Model 865

UNLESS OTHERWISE SPECIFIED: REMOVE ALL BURRS & BREAK SHARP EDGES; HOLE TOLERANCES PER ANSI B94.11-1982, M1973; DIMENSIONS ARE IN INCHES; TOLERANCES ARE: FRACTIONS ±1/16, DECIMALS .X ±.062, .XX ±.030, .XXX±.010, ANGLES ±30'	CONTRACT NO.	RTS SYSTEMS BURBANK, CALIFORNIA, USA	
	APPROVALS / DRAWN P. NEILSON	DATE 4/18/90	OUTLINE DRAWING, MODEL 865 CENTRAL MATRIX
MATERIAL	CHECKED		
NEXT ASSY / USED ON	ISSUED		SIZE D / FSCM NO. 60572 / DWG NO. OD2625 / REV A
FINISH			SCALE 1/2 / OD2625A01.DWG / SHEET 1 OF 1
APPLICATION			


EXTERNAL LOUDSPEAKER
CAN BE LOCATED IN A CONVENIENT POSITION FOR BEST OPERATING CONDITIONS. ALMOST ANY LOUDSPEAKER CAN BE USED. THE IMPEDANCE RANGE IS FROM 4 TO 16 OHMS.
LINE CONNECTION
A 50-PIN MICRORIBBON PROVIDES INPUT/OUTPUT CONNECTION TO OTHER 810 STATIONS AND/OR MODEL 865 SYSTEM CENTRAL MATRIX.
POWER AMPLIFIER OUTPUT
A STANDARD 1/4" PHONE PLUG CONNECTS THE LOUDSPEAKER TO THE SPEAKER AMPLIFIER VIA THE RING & TIP CONNECTIONS. OUTPUT POWER CAPABILITY SUPPLY 4 WATTS INTO 4 OHMS OR 2 WATTS INTO 8 OHMS.
ANCILLARY CONNECTIONS
A 25-PIN "D SUB" CONNECTOR FOR EXTERNAL CONNECTION TO CIRCUITS. INCLUDES EXTERNAL HEADSET, UNSWITCHED MIC OUTPUT, REMOTE SPEAKER ON-OFF SWITCH, REMOTE MIC ON-OFF SWITCH, EXTERNAL PANEL MIC, AND SIX SPARES FOR SPECIAL CONNECTIONS.
POWER SUPPLY CONNECTION
A 4-PIN CIRCULAR CONNECTOR ACCEPTS 12 TO 14 VOLTS AC TO POWER THE 810.
VOLUME CONTROL
SETS VOLUME LEVEL FOR EXTERNAL LOUDSPEAKER AND/OR HEADSET
CHANNEL SELECTION
10 LATCHING PUSHBUTTONS SELECT ANY COMBINATION OF CHANNELS.
SPEAKER ON
LATCHING PUSHBUTTON TURNS ON EXTERNAL LOUDSPEAKER.
ALL TALK
MOMENTARY PUSHBUTTON TURNS ON ALL TALK CIRCUITS FOR ALL CHANNELS.
MIC ON-OFF
MOMENTARY PUSHBUTTON TURNS ON MICROPHONE, EITHER HEADSET M'C OR PANEL MIC.
ELECTRET MICROPHONE
CARDIOID PATTERN TO REDUCE UNWANTED ROOM NOISE. FLEXIBLE GOOSENECK MOUNTING EXTENDS TO 20".
HEADSET
ALMOST ANY TYPE OF DYNAMIC MICROPHONE HEADSET CAN BE USED, SINGLE OR DUAL HEADPHONE.
POWER SUPPLY
A MODULAR AC ADAPTER CONVERTS 117 VOLTS AC TO 12-14 VOLTS AC AT 1.6 AMPS.
PANEL MIC
LATCHING PUSHBUTTON SELECTS BETWEEN PANEL MICROPHONE OR HEADSET MICROPHONE.
HEADSET CONNECTOR
XLR-4 TYPE CONNECTOR FOR DYNAMIC MICROPHONE HEADSET, SINGLE OR DUAL PHONE.
2. USE RTS MCS-325 SPEAKER, RADIO SHACK MINIMUS SPEAKER OR OTHER 8 OHM SPEAKER.
1. USE PROPER POWER MODULE FOR 220/240 VAC
NOTES: UNLESS OTHERWISE SPECIFIED
REVISIONS
ZONE | REV | DESCRIPTION | DATE | APPROVED
UNLESS OTHERWISE SPECIFIED
CONTRACT NO.
SERIES 800
APPROVALS | DATE
DRAWN R.NEILSON 9/20/89
CHECKED
ISSUED
MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION
RTS SYSTEMS, INC BURBANK, CALIFORNIA, USA
ILLUSTRATION - MODEL 810B MASTER STATION & RELATED COMPONENTS
SIZE D | FSCM NO. 60572 | DWG NO. ILL6505 | REV
SCALE | 6505-01 | SHEET 1 OF 1





DETAIL A ⚠

SEE SEPARATE PARTS LIST 9030560600

⚠2 IN STANDARD (SQUAWK) CONFIGURATION SWITCHES S1, S2, AND S4 ARE ALTERNATE (LOCKING) ACTION. S301-S311 ARE MOMENTARY.

⚠1 INSTALL COUPLING PIECE, EAD # 99-910 (RTS # 1005003300), BETWEEN ADJACENT SWITCHES (12 PLACES) BEFORE INSTALLING SWITCHES IN THE P.C.BOARD. SEE DETAIL A FOR REFERENCE

NOTES:

	810B
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED

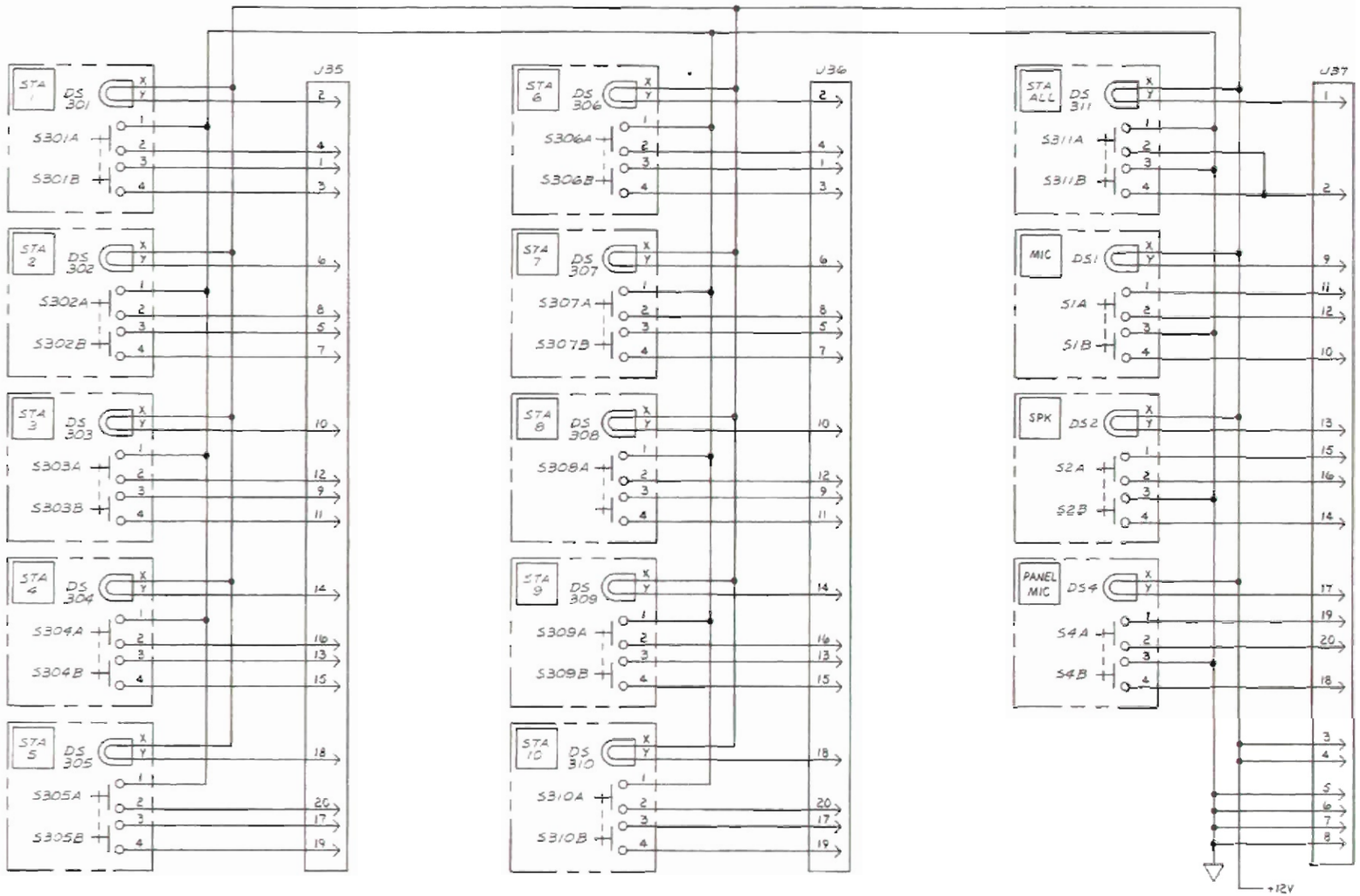
DO NOT SCALE DRAWING

RTS SYSTEMS BURBANK, CALIFORNIA

ASSEMBLY DRAWING - P.C.B. SWITCHBOARD, MODEL 810B

SIZE	FSCM NO.	DWG. NO.	REV
C	60572	AS5606	

SCALE 1:1 SHEET 1 OF 1



2. IN STANDARD (SQUAWK) CONFIGURATION, SWITCHES S1, S2, & S4 ARE ALTERNATE (LOCKING) ACTION. S301 - S311 ARE MOMENTARY
1. LAMPS ARE 18 VOLT

NOTES:

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES .XX ± .XXX ± DO NOT SCALE DRAWING	CONTRACT NO	RTS SYSTEMS BURBANK, CALIFORNIA
MATERIAL	APPROVALS DRAWN G.M. 1-15-88 CHECKED ISSUED	SCHEM DIAG - SWITCHBOARD MODEL 810B
FINISH		SIZE D FSCM NO 60572 DWG NO SD5606 REV SCALE — SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED

SEE SHEET 6

FRONT PANEL

VOL

P26 J26

SWITCHBOARD (AS 5606)

J35 J30 J36 J31 J37 J25

SWITCH MATRIX (SHT 5)

TALK SWITCHING (TC1 - TC10)

LISTEN SWITCHING & TALK SWITCHING (SHT 6)

(LC1 - LC10)

LA1 - LA12

LISTEN BUS (LT1 - LT10)

BILATERAL CURRENT SOURCE TRANSCEIVER (SHT 4)

J3 P3

J102 (REAR PANEL)

CONFERENCE LINE BUSSES

SUMMING AMP (SHT 3)

HP AMP (SHT 3)

TALK DISTRIBUTION BUS

E167 E170 E171 E172

J27 P27

SPARE CONNECTIONS

COMMON

J18 P18

J17 P17

TALLY OUTPUT

TALLY INPUT

SPKR ON

AUTO SPKR

SPKR DIM CIRCUIT

SPKR AMP (SHT 3)

MIC SELECT (SHT 2)

MIC PRE (SHT 2)

MIC ON

BUFFER (SHT 2)

LIMITER

PANEL MIC

HEADSET CONN

MIC

HEADPHONE

CARBON MIC (OPTIONAL)

P22 J22 P21 J21 P24 J24

POWER SUPPLY SHT 3

J1 EXTERNAL SPKR (REAR PNL)

J4 P4

J103 (REAR PANEL)

TO J21	1	1	HI — REM HOST MIC
	2	14	LO
	3	2	LO — REM HOST
TO HEADPHONE AMP	4	15	HI — HEADPHONE OUT
TO MIC PRE	5	3	LO — UNSWITCHED MIC OUT
	6	16	HI
	7	4	COM
TO AUTO SPKR ON	8	17	REM SPKR SWITCH
	9	5	COM
TO MIC ON	10	18	REM MIC SWITCH
TO HEADPHONE OR SUMMING AMP	11	6	HI — LISTEN IN
	12	19	LO
TO J22	13	7	REM PANEL MIC LO
E70	14	20	SPARE CONNECTION
TO J22	15	8	REM PANEL MIC HI
E72	16	21	SPARE CONNECTION
TO J22	17	9	REM PANEL MIC BIAS
E74	18	22	SPARE CONNECTIONS
E75	19	10	
E76	20	23	
E77	21	11	
E78	22	24	
E79	23	12	
E80	24	25	
E81	25	13	
E82	26		

NOTES: SEE SHEET 6

CONTRACT NO.

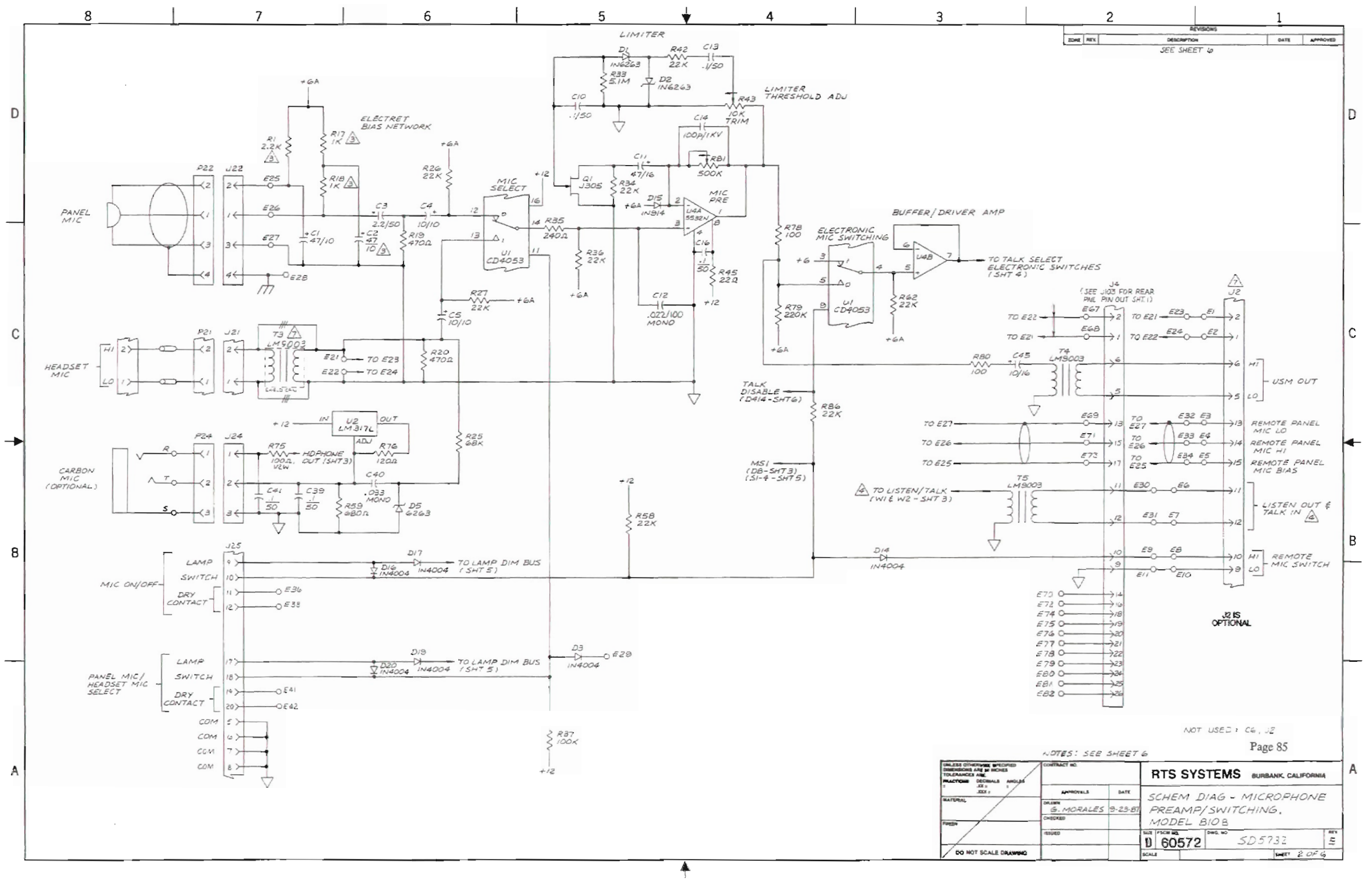
APPROVALS	DATE
DRAWN G. MORALES	10-23-87
CHECKED	
ISSUED	

RTS SYSTEMS BURBANK, CALIFORNIA

SCHEM DIAG - FUNCTIONAL BLOCK REPRESENTATION, MODEL 810B

SIZE D | FSCM NO. 60572 | DWG. NO. SD5732 | REV E

SCALE | SHEET 1 OF 6



RTS SYSTEMS BURBANK, CALIFORNIA

SCHEM DIAG - MICROPHONE PREAMP/SWITCHING, MODEL B10B

D 60572 SD5732 REV E

SHEET 2 OF 4

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
		SEE SHEET 6		

SEE SHEET 6

LA1 (TO R402) .1/50 C50 R2 22K
LA2 (R403) .1/50 C51 R3 22K
LA3 (R404) .1/50 C52 R4 22K
LA4 (R405) .1/50 C53 R5 22K
LA5 (R406) .1/50 C54 R6 22K
LA6 (R407) .1/50 C55 R7 22K
LA7 (R408) .1/50 C56 R8 22K
LA8 (R409) .1/50 C57 R9 22K
LA9 (R410) .1/50 C58 R10 22K
LA10 (R437) .1/50 C59 R11 22K
LA11 (R438) .1/50 C60 R12 22K
LA12 (R439) .1/50 C61 R13 22K
E62 LA13 .1/50 C62 R14 22K
E63 LA14 .1/50 C63 R15 22K

C7 22 pF
R31 56K
U34 5532N
R24 3.3K
+6B
C8 .1/50
C9 .1/50
R32 22Ω
E56
E57
+12
R41 240Ω
C18 1/35 TANT
R49 100Ω

J26 P26
C68 .2/50
R53 22K
R46 22K
C21 .0022/100
R48 10K AUDIO (FRONT PNL)
U6 LM380
C25 10/25
HEADPHONE AMP
C31 47/16
R64 4.7Ω
C32 .1/50
R22 22K
C26 .2/50 MONO
+14
R21 10Ω 1/2W

R93 620Ω
W1
W2
TO LISTEN/TALK (T5-SHT 2)
TO CARBON MIC HDST (R75-SHT 2)

FRONT PNL
J21 P21
DYNAMIC MIC HEADSET
HI
LO
HEADPHONE

J4 (SEE J103 FOR REAR PNL. PIN OUT, SHT. 1)
J2
E13 E12
E15 E14
LO
HI
REMOTE HEADSET HEADPHONE OUT

SPKR ON/OFF
R28 220K
C15 .2/50
R29 100K
U1 CD4053
R54 22K
C22 .1/50
R60 220K
C23 .001
R55 20K AUDIO
SPKR DIM ADJUST
U3B 5532N

R77 220
C38 10/16
E55 LSO
R52 2.2K
C27 10/16
C28 .01
SPEAKER AMP
C33 1/35 TANT
U18 LM383
C34 470/10
C36 1000 16
R65 1K
R66 39Ω
C69 1/50 POLY
R90 22K
R92
T
T5
R5
R
S
W3
J1 EXTERNAL SPEAKER (REAR PANEL)

LAMP DIM BUS (SHT 5)
D6 IN4004
D4 IN4004
J25
E45
E46
AUTO SPKR
AUTO SPKR ON (SHT 5)
SI-3

R 220 22K
SPKR DIM SWITCH
U24 CD4053
SPKR DIM ENABLE
SI-1
SI-2
D8 IN4004
TO MS1 (SHT 2)
D7 IN4004
TO ALL BUS (SHT 5)

R87 1K
R88 39Ω
C64 1/50 POLY
R91 22K
C65 470/16
R89 1K
C70 1000 16
C71 .022/100
U5 LM383
C66 10/16
C67 1/35 TANT
+14
E55
D18 IN4004
E60

J4 (SEE J103 FOR REAR PNL. PIN OUT, SHT. 1)
J2
E17 E16
E18 E18
REMOTE SPKR SW
COM

+14 SOURCE
E47 E48
D396 IN4004
R321 .1Ω 1/2W
U301 LM317T
ADJ
R319 240Ω
R318 2.2K
+12 SOURCE
E49 E50
U302 78L06
GND
R323 22Ω
+6B SOURCE
C312 100/16
R322 100Ω
+6 SOURCE
E51
E52
+6A
C306 2200 25
C307 2200 25
C308 2200 25
C310 .2/50 MONO
C311 .2/50 MONO
C309 100/16
R82 20K C48 .1/250V
GND TEST POINT
E53
E54

C302 .01/1KV
C304 .01 1KV
D397
D398
MR502
D399
D400
C303 .01/1KV
C305 .01/1KV
REAR PNL
J101 (REAR PNL)
P23
J23
F301 2 ASB

NOT USED: C17, 19, 20, 24, 29, 30, 35, 37, 42, 43, 44, 46, 47

NOTES: SEE SHEET 6

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
.XX ±
.XXX ±
MATERIAL
FINISH
DO NOT SCALE DRAWING

CONTRACT NO.

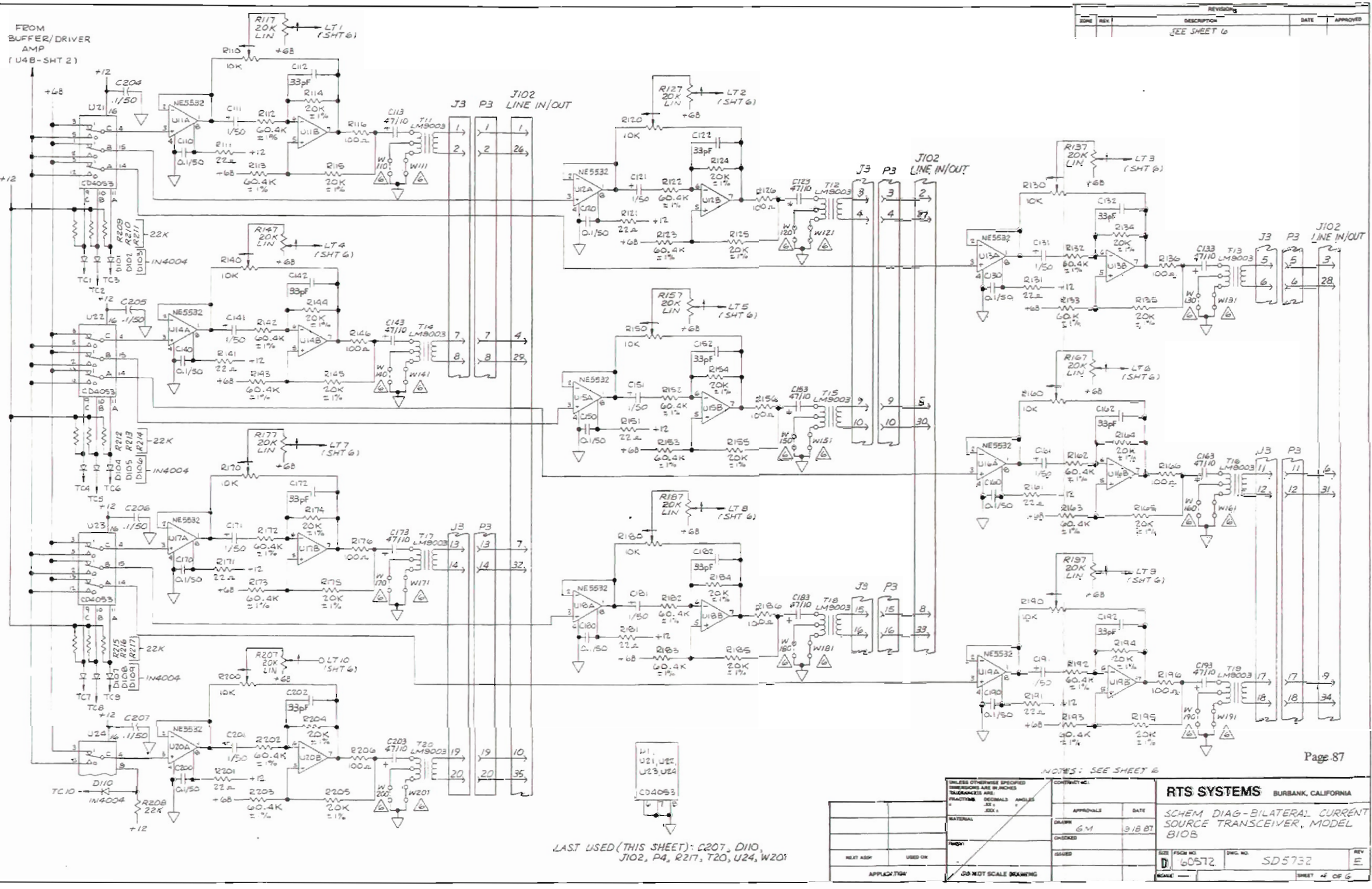
APPROVALS	DATE
DRAWN S. MORALES	9-21-87
CHECKED	
ISSUED	

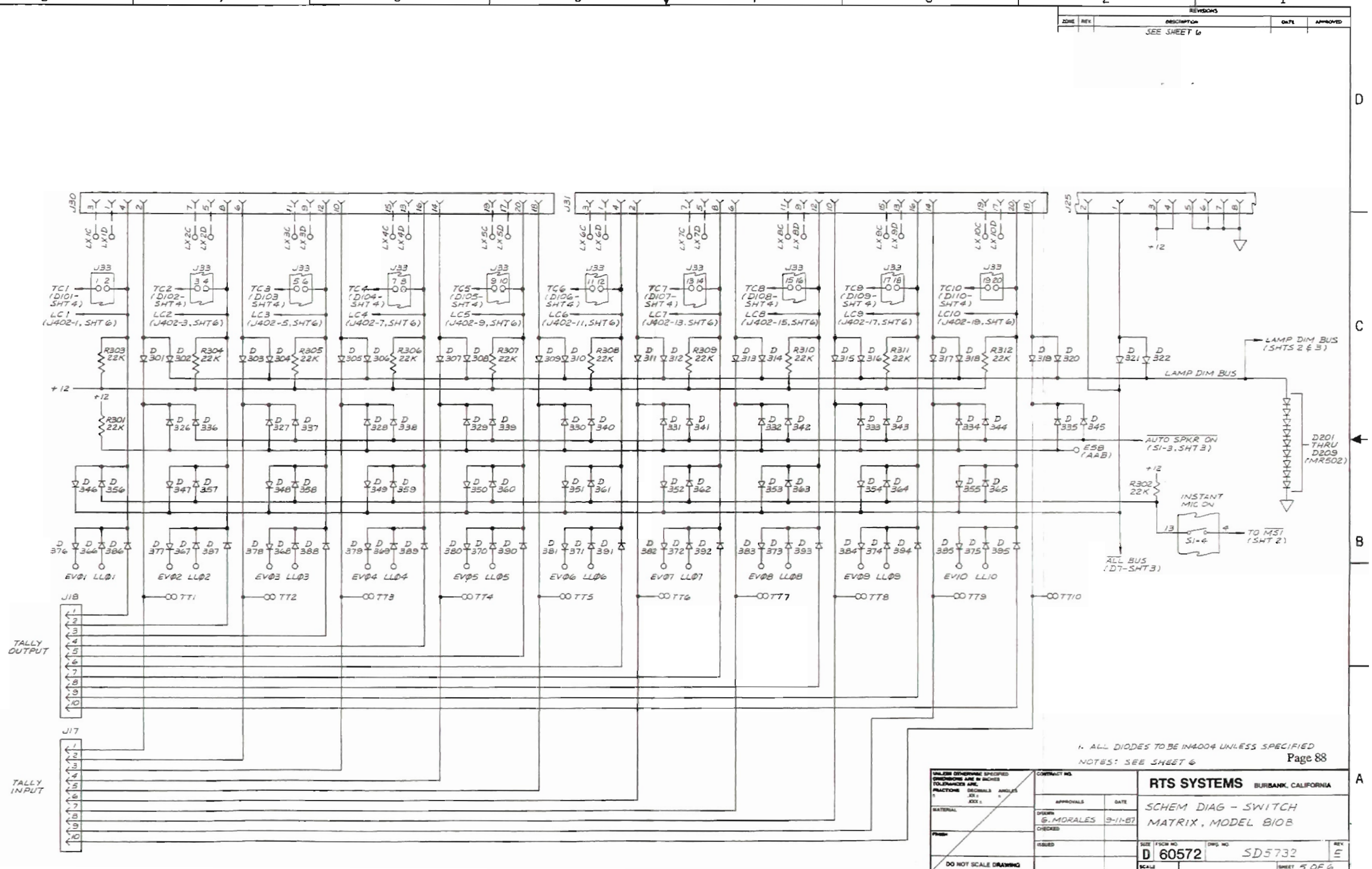
RTS SYSTEMS BURBANK, CALIFORNIA

SCHEM DIAG - HEADPHONE/ SPKR AMPS & POWER SUPPLY, MODEL 8108

SIZE D | FSCM NO. 60572 | DWG. NO. SD-5732 | REV E

SCALE | SHEET 3 OF 6


FROM BUFFER/DRIVER AMP (U48-SHT 2)
J102 LINE IN/OUT
J3
P3
LT1 (SHT 6)
LT2 (SHT 6)
LT3 (SHT 6)
LT4 (SHT 6)
LT5 (SHT 6)
LT6 (SHT 6)
LT7 (SHT 6)
LT8 (SHT 6)
LT9 (SHT 6)
LT10 (SHT 6)
NE5532
CD4053
IN4004
LM9003
U1, U21, U22, U23, U24
CD4053
LAST USED (THIS SHEET): C207, D110, J102, P4, R217, T20, U24, W201
SEE SHEET 6
NOTES: SEE SHEET 6
RTS SYSTEMS BURBANK, CALIFORNIA
SCHEM DIAG-BILATERAL CURRENT SOURCE TRANSCEIVER, MODEL 810B
SD5732
Page 87


REVISIONS
ZONE | REV. | DESCRIPTION | DATE | APPROVED
SEE SHEET 6
J30
J31
J25
J33
TC1 (D101-SHT 4)
TC2 (D102-SHT 4)
TC3 (D103-SHT 4)
TC4 (D104-SHT 4)
TC5 (D105-SHT 4)
TC6 (D106-SHT 4)
TC7 (D107-SHT 4)
TC8 (D108-SHT 4)
TC9 (D109-SHT 4)
TC10 (D110-SHT 4)
LC1 (J402-1, SHT 6)
LC2 (J402-3, SHT 6)
LC3 (J402-5, SHT 6)
LC4 (J402-7, SHT 6)
LC5 (J402-9, SHT 6)
LC6 (J402-11, SHT 6)
LC7 (J402-13, SHT 6)
LC8 (J402-15, SHT 6)
LC9 (J402-17, SHT 6)
LC10 (J402-19, SHT 6)
+12
LAMP DIM BUS
LAMP DIM BUS (SHTS 2 & 3)
AUTO SPKR ON (SI-3, SHT 3)
E58 (AAB)
D201 THRU D209 (MRS02)
INSTANT MIC ON
SI-4
TO MSI (SHT 2)
ALL BUS (D7-SHT 3)
EV01 LL01
EV02 LL02
EV03 LL03
EV04 LL04
EV05 LL05
EV06 LL06
EV07 LL07
EV08 LL08
EV09 LL09
EV10 LL10
TT1
TT2
TT3
TT4
TT5
TT6
TT7
TT8
TT9
TT10
J18
TALLY OUTPUT
J17
TALLY INPUT
1. ALL DIODES TO BE IN4004 UNLESS SPECIFIED
NOTES: SEE SHEET 6
RTS SYSTEMS BURBANK, CALIFORNIA
SCHEM DIAG - SWITCH MATRIX, MODEL 8108
DRAWN G. MORALES 9-11-87
SIZE D
FSCM NO. 60572
DWG. NO. SD5732
REV. E
SCALE
SHEET 5 OF 6
DO NOT SCALE DRAWING

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PER ECO # 2252	6-17-88	
	B	PER ECO # 2266	8-1-88	
	C	PER ECO # 2290	8-25-88	
	D	PER ECO # 2337	11-7-88	
	E	PER ECO # 2497 RB	7/26/89	

LISTEN AMPLIFIER INPUTS (SHT 3)

LISTEN TAP

LT 1 (R117-SHT 4)
LT 2 (R127-SHT 4)
LT 3 (R137-SHT 4)
LT 4 (R147-SHT 4)
LT 5 (R157-SHT 4)
LT 6 (R167-SHT 4)
LT 7 (R177-SHT 4)
LT 8 (R187-SHT 4)
LT 9 (R197-SHT 4)
LT 10 (R207-SHT 4)

U401 4053
U402 4053
U403 4053
U404 4053
U405 4503
U406 4503

C400 .1/50
C401 .1/50
C402 .1/50
C403 .1/50
C404 .1/50
C405 .1/50

R411 22K
R412 22K
R413 22K
R414 22K
R415 22K
R416 22K
R417 22K
R418 22K
R419 22K
R420 22K
R421 22K
R422 22K

R423 22K
R424 22K
R425 22K
R426 22K
R427 22K
R428 22K
R429 22K
R430 22K
R431 22K
R432 100K
R433 22K
R434 22K
R435 22K

R402-R404 100K
R405-R407 100K
R408-R410 100K
R437-R439 100K
R400 100K
R401 100K

D401
D402
D403
D404
D405
D406
D407
D408
D409
D410
D411
D412
D413
D414
D415

J401 SQUAWK/PERMANENT LISTEN ASSIGN

J402 SWITCHED LISTEN ASSIGN

LC 1 (SHT 5)
LC 2 (SHT 5)
LC 3 (SHT 5)
LC 4 (SHT 5)
LC 5 (SHT 5)
LC 6 (SHT 5)
LC 7 (SHT 5)
LC 8 (SHT 5)
LC 9 (SHT 5)
LC 10 (SHT 5)

E65 XS P1
E66 XS P2
SPARE CONTROL

SPARES
E59 SP1
E60 SP2

TALK DISABLE (RB6-SHT 2)
E61 (LTD) LISTEN & TALK DISABLED

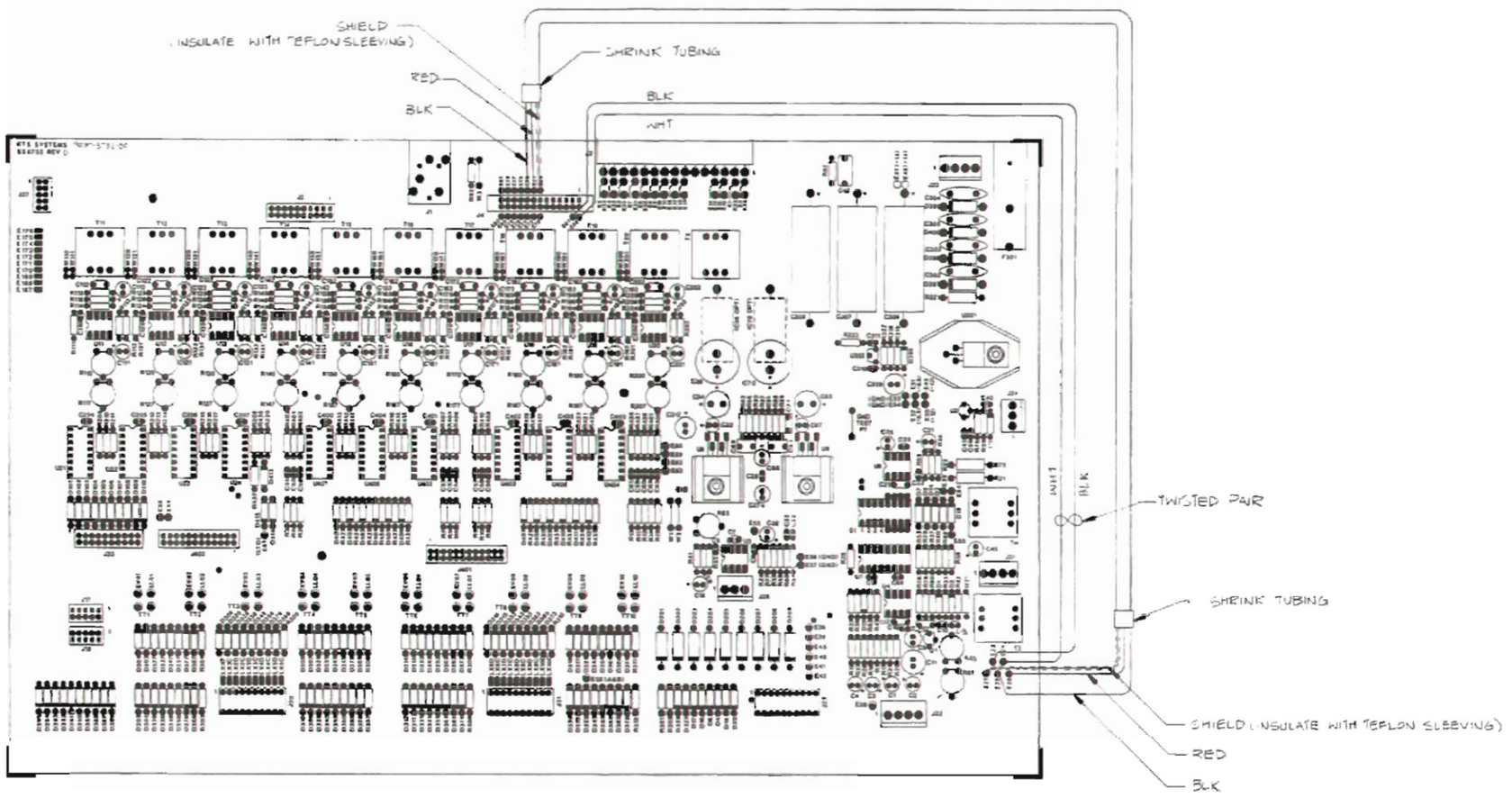
U24

+12
+6B

NOTES:
1. ALL RESISTORS ARE CARBON FILM, 1/4 WATT, ± 5%
2. CAPACITANCE VALUES ARE SHOWN: MICROFARADS/VOLTS
3. THESE PARTS (R17, R18, & C2) FOR ELECTRET BIAS NETWORK MIC. REMOVE R1 WHEN USING THIS NETWORK
4. IN STANDARD CONFIGURATION, J2-1 & -12 ARE LISTEN OUT; INSTALL W2 BUT NOT W1. FOR OPTIONAL TALK IN ON J2-7 & -12 INSTALL R93 RESISTOR AT W1. DO NOT INSTALL W2.
5. CUT TRACE ACROSS R49 FOR MIN VOLUME OPTION
6. FOR 2Vpp, 200Ω OPERATION (STANDARD CONFIGURATION) INSTALL JUMPERS W111, W121, W131, W141, W151, W161, W171, W181, W191, & W201. FOR 4Vpp, 800Ω OPERATION INSTALL JUMPERS W110, W120, W130, W140, W150, W160, W170, W180, W190, & W200
7. THE FOLLOWING PARTS NORMALLY NOT INSTALLED: R92, T3 (CUT TRACES AS SHOWN WHEN INSTALLING), W3, J2.
8. ALL DIODES TO BE IN4004 UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES .XX ± .XXX ±	CONTRACT NO.	RTS SYSTEMS BURBANK, CALIFORNIA	
MATERIAL	APPROVALS / DATE	SCHEM DIAG - LISTEN SWITCHING, MODEL 8108	
FINISH	DRAWN G. MORALES 10-7-87		
DO NOT SCALE DRAWING	CHECKED		
	ISSUED	SIZE D FSCM NO. 60572 DWG. NO. SD5732 REV. E	
		SCALE — SHEET 6 OF 6	

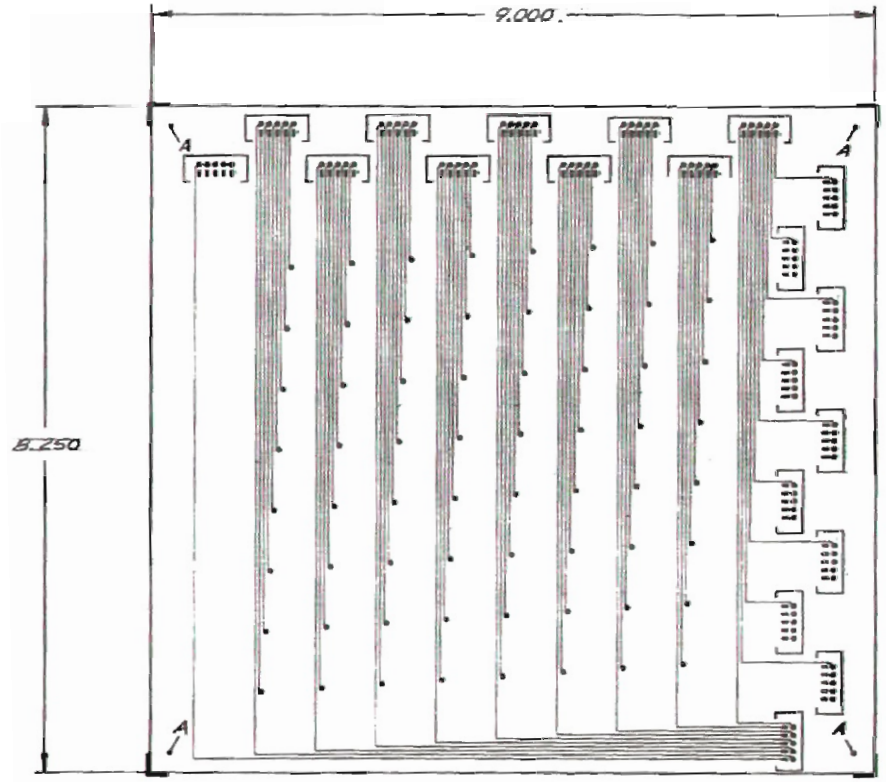
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	C	REVISED & REDRAWN PER ECO# 2266	6 3 98	
	D	REVISED PER ECO# 2290	8-26-98	
	E	REVISED PER ECO# 2317	9-2-98	



USE IN CONJUNCTION WITH DWG NO AE5729 AND PARTS LIST 90105729-01.

NOTES UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES .XX ±.01 .XXX ±.005	CONTRACT NO 300 SERIES	RTS SYSTEMS BURBANK, CALIFORNIA	
MATERIAL	APPROVALS	DATE	WIRING DIAGRAM MOTHER BOARD MASTER STATION MODEL 810B
FINISH	DRAWN RTCRUZ	8.3.98	
NEXT ASSY USED ON	CHECKED GM		
APPLICATION DO NOT SCALE DRAWING	ISSUED	SIZE D FSCM NO 60572 DWG NO WD5732 REV E	
		SCALE 1/1 SHEET 1 OF 1	



HOLE DATA		
SYM	DESCRIPTION	QTY
NOM	.035 DIA	264
A	.156 DIA	4

NOTES: UNLESS OTHERWISE SPECIFIED

1. MATERIAL: .062 THK. EPOXY GLASS LAMINATE, 1 OZ. COPPER CLAD, 2 SIDES, TYPE FR-4 OR EQUIV.
2. COPPER PLATE ALL HOLES .001 MIN PER SIDE.
3. HOLE SIZE TOLERANCES ARE $^{+.003}_{-.002}$ DIMENSIONS APPLY AFTER PLATING.
4. SOLDER PLATE AND FUSE ALL CIRCUITRY EXCEPT CONNECTOR FINGERS.
5. CONNECTOR FINGERS TO BE GOLD PLATED .00001 MIN. OVER NICKEL.
6. FRONT TO BACK REGISTRATION TO BE WITHIN ± .005.
7. HOLE TO PAD REGISTRATION TO BE WITHIN ± .010.
8. FINISHED CONDUCTOR PATTERN TO BE WITHIN 20% OF ORIGINAL ARTWORK.
9. THIS FABRICATION DETAIL COVERS ARTWORK 24-048.

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED

SEE NOTE 1

R. BOOTH 12/4/68

APPLICATION

DO NOT SCALE DRAWING

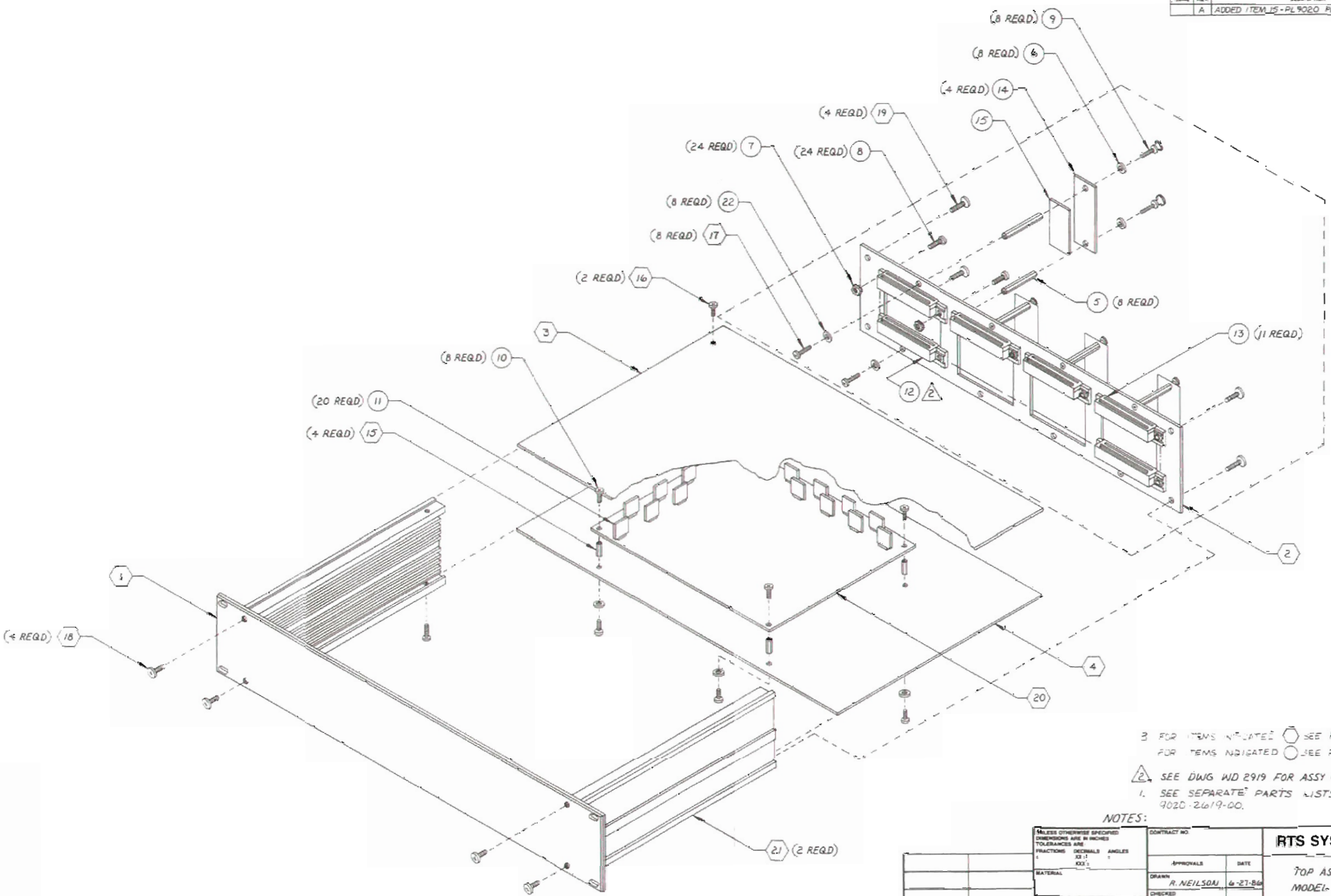
RTS SYSTEMS BURBANK, CALIFORNIA

FAB DETAIL-P.C.B. SQUAWK JUNCTION UNIT, 865

SIZE C | FSCM NO 68512 | DWG NO FAB 26083 | REV

SCALE 1/1 | SHEET 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ADDED ITEM 15 - PL 9020 PER ECOM 2559	7-25-89	



3 FOR ITEMS INDICATED ⬡ SEE PL-9010-2625-00.
FOR ITEMS INDICATED ◯ SEE PL-9020-2619-00.

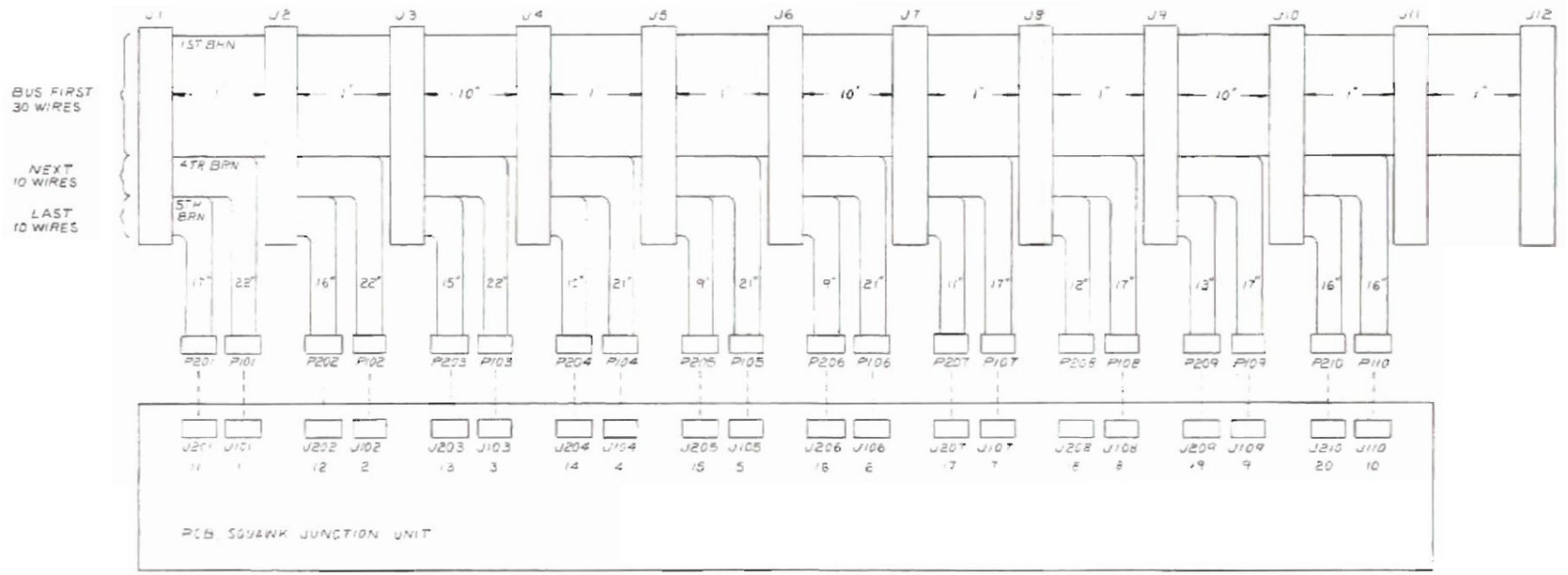
2. SEE DWG WD 2919 FOR ASSY OF ITEM 12.

1. SEE SEPARATE PARTS LISTS 9010-2625-00 & 9020-2619-00.

NOTES:

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES .XX ± .XXX ±	CONTRACT NO.	RTS SYSTEMS	BERKELEY, CALIFORNIA
MATERIAL	APPROVALS / DRAWN R. NEILSON	DATE 6-27-86	TOP ASSY DRAWING, MODEL 869 CENTRAL MATRIX
FINISH	CHECKED		
NEXT ASSY / USED ON	ISSUED		SIZE D · FSCM NO. 60572 · DWG NO. AS 2625 · REV. A
APPLICATION	DO NOT SCALE DRAWING		SCALE · SHEET

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	RELEASED FOR PRODUCTION	1-6-82	



NOTES: UNLESS OTHERWISE SPECIFIED
1. J1 - J11 ARE FEMALE 50-PIN CONNECTORS
J12 IS A MALE 50-PIN CONNECTOR

NEXT ASSY	USED ON		
APPLICATION		DO NOT SCALE DRAWING	

DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± XX ±
.XXX ±
MATERIAL
FINISH

PRODUCT LINE

	APPROVALS	DATE
DRAWN	S. DUEBBER	1-6-82
CHECKED	L. PEARSON	1-7-82
ISSUED		

RTS SYSTEMS BURBANK, CALIFORNIA

WIRING DIAGRAM, SQUAWK JUNCTION UNIT MODEL 865

SIZE	FSCM NO.	DWG. NO.	REV.
D	20572	WD 2625	A

SCALE NONE SHEET 1 OF 1

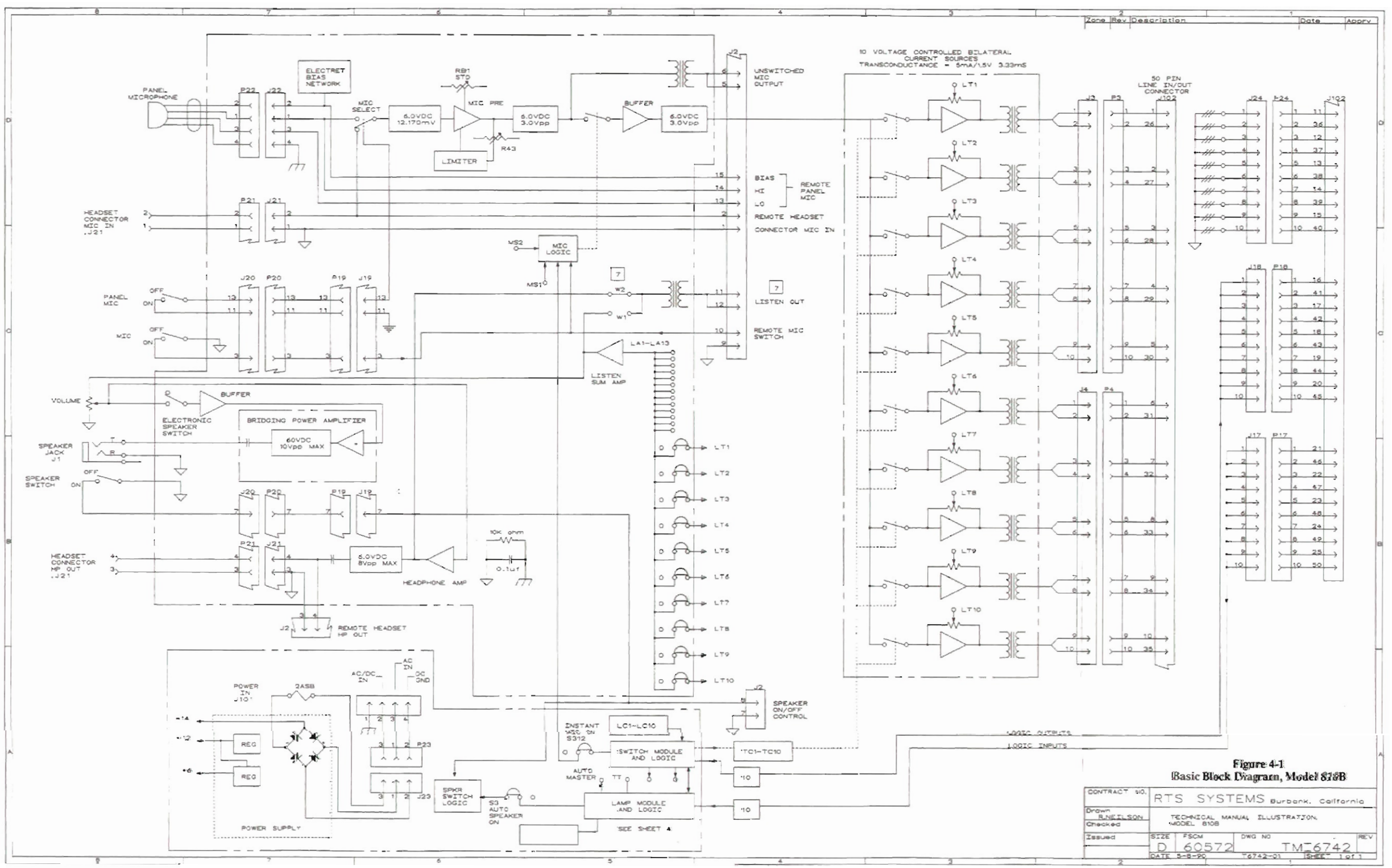


Figure 4-1
Basic Block Diagram, Model 818B

CONTRACT NO.	RTS SYSTEMS Burbank, California		
Drawn B.NEILSON	TECHNICAL MANUAL ILLUSTRATION MODEL 818B		
Checked			
Issued	SIZE D	FSCM 60572	DWG NO TM-6742 REV
	DATE 5-8-90	T6742-01	SHEET 1 of 1

Zone	Rev	Description	Date	APPR'V
	A	REVISED & REDRAWN WITH NO CHANGES	4-15-90	

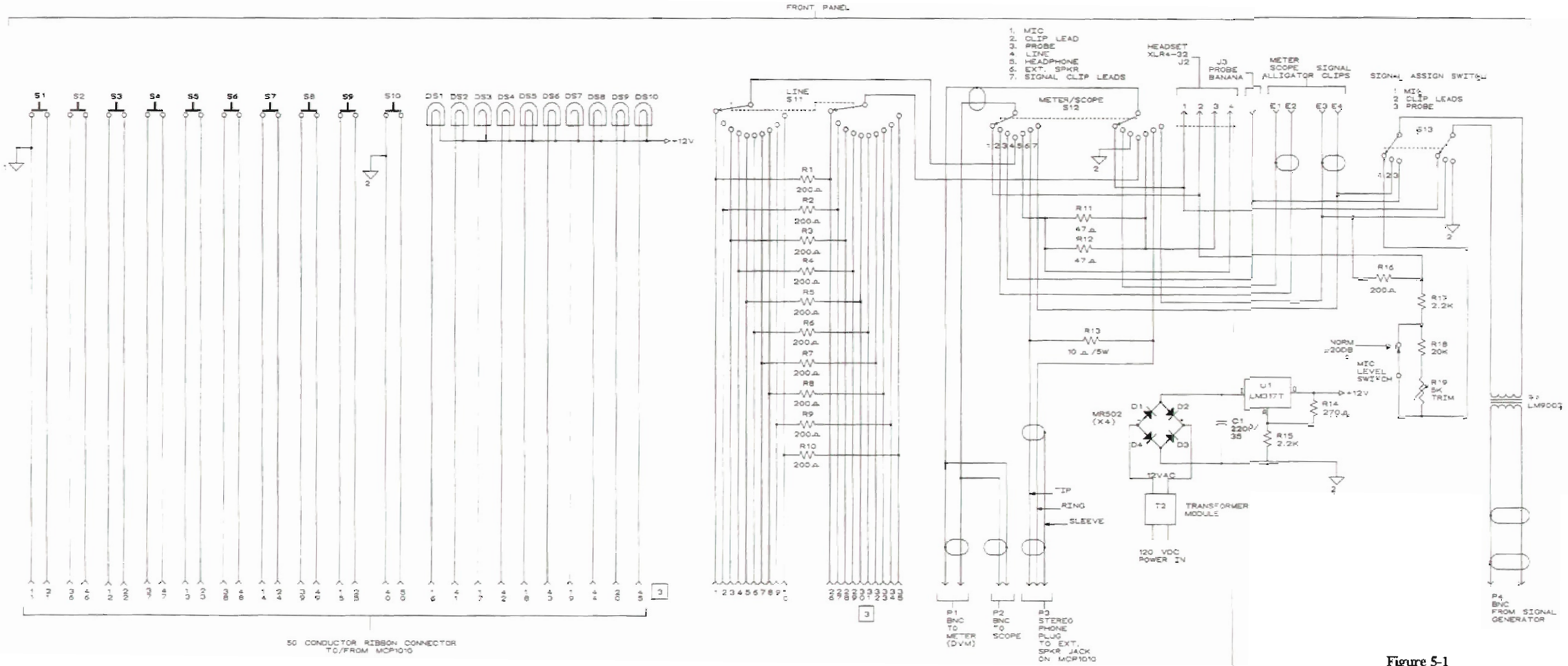


Figure 5-1
Model 810B Test Fixture

NOTES:
1. PIN NUMBERS ARE SHOWN (VERTICAL)
2. ALL RESISTORS ARE 1/4 WATT.
4. DS1-DS10 ARE #86 AND ARE MOUNTED IN S1-S10
UNLESS OTHERWISE SPECIFIED

CONTRACT NO.	RTS SYSTEMS Burbank, California		
PROD. TEST			
Drawn R.NEILSON	SCHEMATIC DIAGRAM, FOR MCP1010 TEST SET		
Checked			
Issued	SIZE D	FSCM 60572	DWG NO SD2743 REV A
	DATE	S2743A01	SHEET 1 of 1