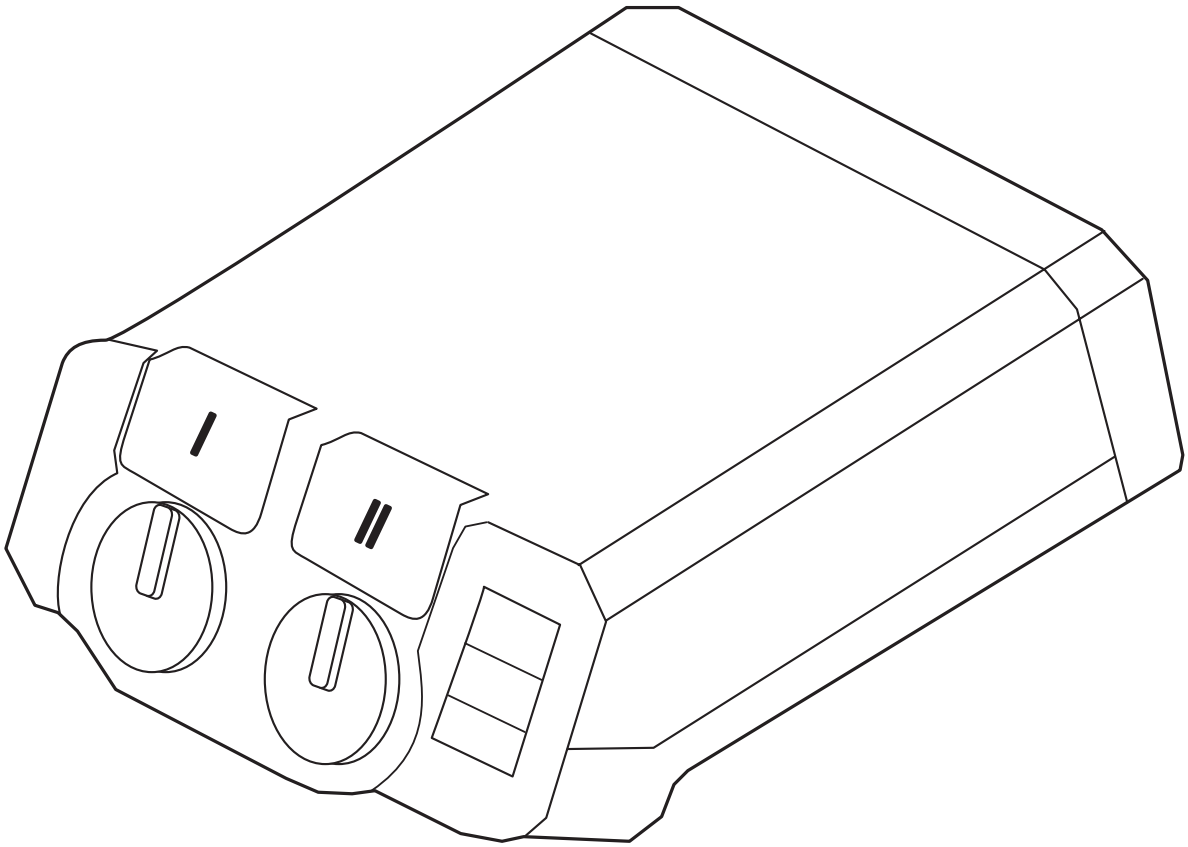
RTS™ Two Wire Intercom Series

innovating the future of communications

MODEL BP-325
Belt-pack Intercom Station
User Manual



9350-5690-00 Rev. L 06/2006

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Copyright Notice

Warranty Notice

See the enclosed warranty card for further details.

Customer Support

Technical questions should be directed to:

Customer Service Department
RTS/Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 USA
Telephone: 800-392-3497
Fax: 800-323-0498
Factory Service: 800-553-5992

Return Shipping Instructions

Customer Service Department
Telex Communications, Inc. (Lincoln, NE)
Telephone: 402-467-5321
Fax: 402-467-3279
Factory Service: 800-553-5992

Please include a note in the box which supplies 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 the Manufacturer

All shipments of product should be made via UPS Ground, prepaid (you may request from Factory Service a different shipment method). Any shipment upgrades will be paid by the customer. The equipment should be shipped in the original packing carton. If the original carton is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four (4) inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Proof of Purchase for warranty repair. Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper, collect.

Factory Service Department
Telex Communications, Inc.
8601 East Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.
Attn: Service

This package should include the following:

TABLE OF CONTENTS

CHAPTER 1

CONNECTIONS AND OPERATION

This section describes operation of the BP325 as supplied from the factory. Use of an RTS power supply to power the intercom system is assumed. For options and use of an alternate power source (See “PROGRAMMABLE OPTIONS” on page 3. and See “ALTERNATE POWERING METHODS” on page 5..

CONNECTIONS

Headset

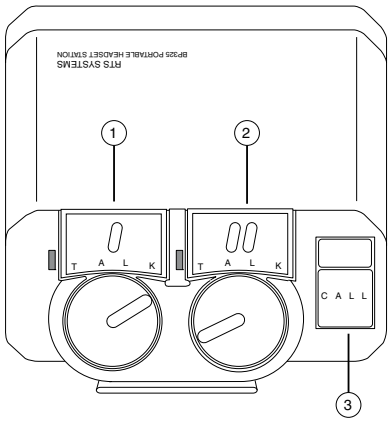
Connect a headset using one of the three headset connectors on the back panel. The MONO HEADSET and STEREO HEADSET connectors are for monaural or stereo dynamic-mic headsets. The CARB-MIC HEADSET connector is for a monaural carbon-mic headset. Refer to the specifications for pin-outs of these connectors if needed.

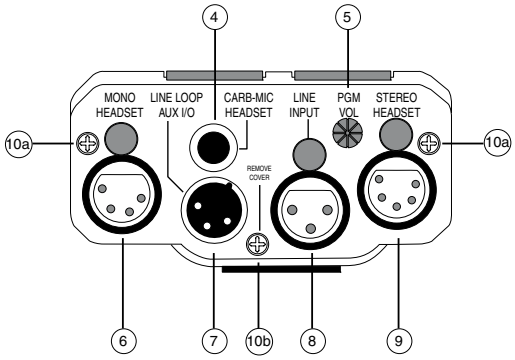
Intercom Channels

Connect the BP325 to the intercom system using the LINE INPUT connector on the back panel.

If desired, connect an additional intercom station to the intercom system using the LINE LOOP connector on the back panel.

1. ***Channel 1 talk button, indicator light and listen volume control.***
2. ***Channel 2 talk button, indicator light and listen volume control.***
3. ***Call button and indicator light.***
4. ***Carbon-mic headset jack. May also be used for external mic switch. See "Programable Options".***
5. ***Program volume control. Active only when using the line loop connector for optional program input. See "Programable Options".***
6. ***Monaural dynamic-mic headset jack.***
7. ***Intercom line loop connector for connection to additional intercom stations. May also be used for external program input, external mic switch, or a non-standard power source. See "Programable Options" and "Alternate Powering Methods".***
8. ***Intercom line connector. For connection to intercom system.***
9. ***Stereo dynamic-mic headset jack.***
10. ***Rear cover removal to set options: Loosen two screws (10a) and remove one screw (10b).***





OPERATION

1. Attach the BP325 to your belt or other convenient location using the belt clip on the rear panel.
2. Put on the headset and adjust the listen volume controls while listening to the intercom channels.
3. A TALK button may be activated in either of two ways:

   Momentary Mode: Press and hold the TALK button, then speak into the microphone. The green talk LED will remain lit while the TALK button is held. Release the TALK button when finished talking. The talk LED will turn off.

   Latching Mode for Hands-free Conversation: Tap the TALK button (do not press and hold). The green talk LED will turn on and remain on. When finished talking, tap the TALK button again. The talk LED will turn off.
4. Calling an intercom channel:

   a.Turn on the TALK button for the channel to be called (the green talk LED should be lit).

   b.Press and hold the CALL button. The red call LED will light while the button is pressed, indicating that a call signal is being sent. When a response is heard, release the CALL button and begin your conversation.

   c.Turn off the TALK button when finished with your conversation.
5. Receiving a call:

a.When there is an incoming call on a channel, the red call LED will flash.
b.If a talk LED is also flashing, this indicates that you need to activate that TALK button to begin your conversation.
c.If no talk LED is flashing, this indicates that the TALK button is already on; simply begin your conversation.

6. Sending a Talk-off Signal: The BP325 can generate an inaudible signal which can be used to deactivate the talk buttons on other intercom stations connected to an intercom channel. (May be used with models BP325, MCE325 and MRT327). This feature is useful when an unattended intercom station has its microphone activated and is causing noise on an intercom channel. To send a talk-off signal:
a.Turn off both TALK buttons on the BP325.
b.Tap the CALL button three quick taps. The red call LED will turn on for about 2 seconds.
c.While the red call LED is on, momentarily press the TALK button for the channel that has the TALK button to be turned off. This will send the signal and turn off the remote TALK button.

PROGRAMMABLE OPTIONS

Several internal option switches and jumpers can modify the belt pack's operation. The factory settings are summarized below. To change any of the factory settings, remove the rear cover screws as shown in Figure 1. Jumper and switch locations are shown on the label inside the rear cover.

FACTORY SETTINGS

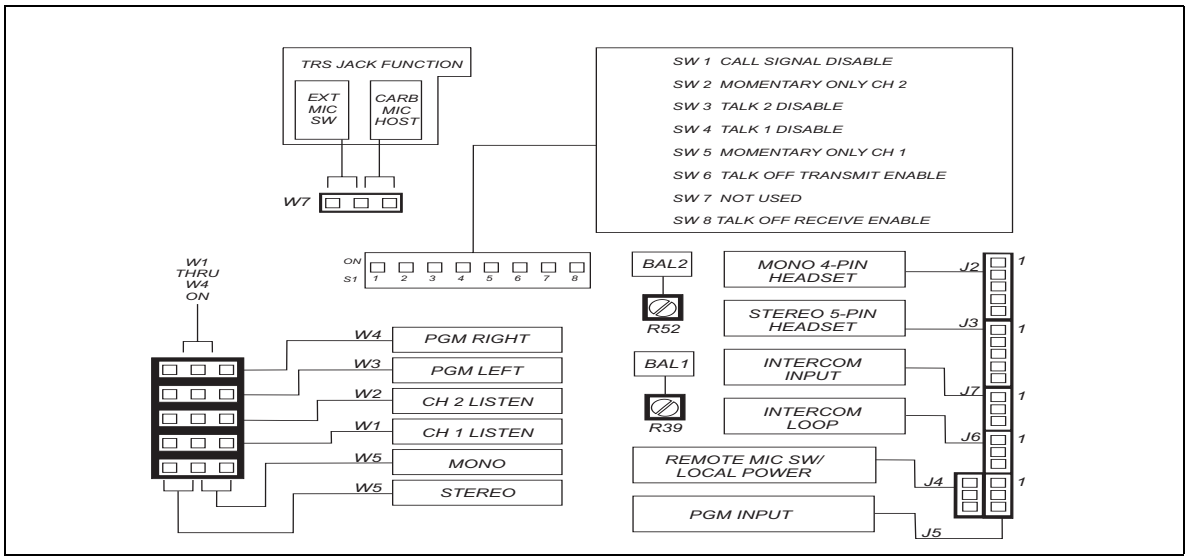


TABLE 1. BP-325 Unit Jumper Settings - This equipment complies with the requirements in Part 15 of the FCC Rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct the interference.

Jumpers (W1-W7)

No. Setting	Description	Factory Default
W1	CH 1 Intercom Audio Listen[a]	ON
W2	CH 2 Intercom Audio Listen[a]	ON
W3	Program input to left headphone[b]	OFF
W4	Program input to right headphone[b]	OFF
W5	Stereo/Mono operation[c]	Stereo
W6	Not Used	
W7	CARB/MIC Jack Function[d]	Headset
DIP Switches (S1)		
1	Call Signal Transmit Disable	OFF
2	Momentary Only Talk Button, CH2[e]	OFF
3	CH2 Talk Disable[f]	OFF
4	CH1 Talk Disable[f]	OFF
5	Momentary Only Talk Button, CH1[e]	OFF
6	Talk-off Transmit enable[g]	ON
7	Not Used	OFF
8	Talk-off Receive Enable[h] [i]	ON

a. Listen is factory set to be ON all the time on both channels. Setting W1 to the OFF position will disable intercom listen audio on channel 1 (usually the left headphone of a stereo headset). Setting W2 to the OFF position will disable intercom listen audio on channel 2 (usually the right headphone of a stereo headset). Listen disable could be used, for example, when you want to use the left side of a stereo headphone exclusively for program audio input and the right side for a single channel of intercom audio. In this case you would:

1. Set W1 to OFF to disable channel 1 intercom audio listen to the left headphone.

2. Set DIP switch 4 to ON to disable channel 1 talk.

3. Setup the left channel for program input.

b. To use program audio input:

1. Unplug the LINE LOOP connector from J6, and plug it into J5.

2. If you are using a stereo headset, set W3 and/or W4 to ON to route the program audio to the left headphone, right headphone or both headphones. If you are using a mono headset, set both W3 and W4 to ON.

3. Connect the program source to the LINE LOOP connector using an XLR-3-32 female receptacle wired as follows

Pin 1 - Common

Pin 2 - Program input high

Pin 3 - Program input low

4. Adjust program input volume using the PGM VOL control on the back panel.

c. W5 applies to a stereo dynamic-mic headset connected to the STEREO HEADSET jack. With W5 set in the stereo position, intercom channel 1 will be heard in the left headphone only, and channel 2 will be heard only in the right. In the mono position, both intercom channels (and program audio if connected) will be heard in both headphones. If you are using monaural headphones connected to the MONO HEADSET jack, W5 may be left in the stereo position.

d. The CARB-MIC connector may be used to connect either a headset or an external mic ON/OFF switch. (If you are using a carbon-mic headset, but still wish to use an external mic switch, the LINE LOOP connector may alternatively be used for the mic switch. See note X, below.) To use the CARB-MIC connector for an external mic ON/OFF switch:

1. Place jumper W7 in the “EXT MIC SW” position.

2. Use a stereo phone plug to connect the external switch to the CARB-MIC HEADSET jack:

Tip: Remote Mic Switch Normal-open Contact

Ring: No connection

Sleeve: Remote Mic Switch Common

3. To use the external mic switch, first set one or both TALK buttons to the latched-on position. Then, press the external mic switched turn the TALK button(s) ON. Release the mic switch to turn the TALK button(s) OFF. Note, the TALK buttons may still be turned ON or OFF from the BP-325; however, the external mic switch will not work unless the TALK buttons are first turned ON at the BP-325

e. As supplied, the TALK buttons feature a dual-action momentary/latching operation: press and hold for momentary talk, then release when finished; or tap to latch ON for hands-free talk, and tap again to turn OFF when finished talking. If desired, the latching operation may be defeated, and the TALK buttons may be operated in momentary mode only.

f. Setting DIP switch 3 to the ON position will disable the channel 2 TALK button. Setting DIP switch 4 to the ON position will disable the channel 1 TALK button.

g. As supplied, the BP-325 can generate an inaudible talk-off signal which can be used to deactivate the talk buttons on other intercom stations connected to an intercom channel. To turn this feature OFF, set DIP switch 6 to the OFF position.

h. As supplied, other intercom stations can deactivate the TALK buttons on the BP-325 using the Talk-Off feature from their intercom stations. To disable this feature, set DIP switch 8 in the OFF position.

i. Using the LINE LOOP connector for an external mic ON/OFF switch:

   1. Unplug the LINE LOOP connector from J6 on the circuit board, and plug it into J4.

   2. Connect the external mic switch to the LINE LOOP connector using an SLR-3-32 female receptacle wired as follows:

Pin 1:	Remote Mic Switch Common
Pin 2:	No Connection
Pin 3:	Remote Mic Switch Normal-open Contact

   3. To use the external mic switch, first set one or both TALK buttons to the latched-ON position. Then, press the external mic switch to turn ON the TALK button(s). Release the mic switch to turn off the TALK button(s). Note, the TALK buttons may still be turned ON or OFF from the BP-325; however, the external mic switch will not work unless the TALK buttons are first turned on at the BP-325.

SIDETONE ADJUSTMENT

You can change the level of your own voice heard in your headphones while talking on an intercom channel. Adjust R39 to change your voice level when talking on channel 1. Adjust R52 to change your voice level when talking on channel 2.

ALTERNATE POWERING METHODS

GENERAL

When using an RTS power supply to power the intercom system, power is carried to the BP325 on pin 2 of the LINE INPUT connector along with the channel 1 audio. Pin 1 is the DC return. The unique design of RTS power supplies permits power to be carried on an audio channel. RTS power supplies also provide the proper terminating impedance for each intercom channel. If a non-RTS power supply is used, there are two alternatives for connecting power and intercom audio.

The first method uses channel 1 only to connect the non-RTS power supply. Audio on channel 1 will be unusable as the power supply will look like a short circuit at audio frequencies. Channel 2, however, will still be operational. Also, channel 2 will require a terminating impedance, since this is not supplied by the non-RTS power supply.

The second method allows the use of a non-RTS power supply while still maintaining two audio channels. This method requires an additional wire to the belt pack, and the LINE LOOP connector will not be usable for connecting another intercom station. Also, each intercom channel must be properly terminated. The two methods are discussed below.

METHOD ONE: ONE CHANNEL OPERATION WITH A NON-RTS POWER SUPPLY

Using an XLR-3-32 female connector, connect the external power source and the channel terminating components to the LINE INPUT connector as shown in Figure 2.

If desired, the LINE LOOP connector may be used to connect power and audio to an additional intercom station.

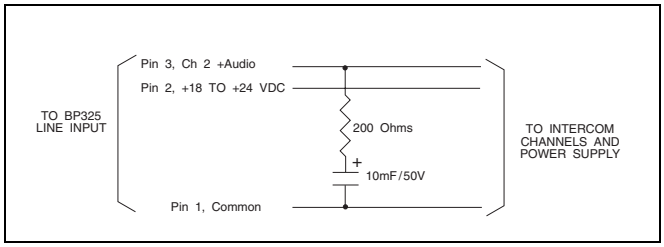


FIGURE 1. LINE INPUT Connector Wiring for 1-Channel Operation with Non-RTS Power Supply

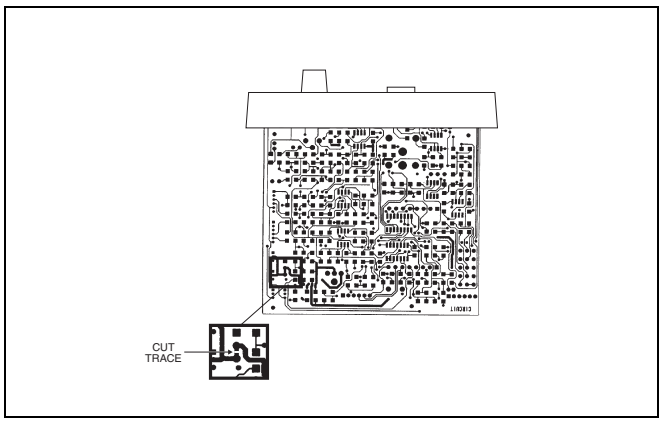


FIGURE 2. Bottom View of the Main Circuit Board

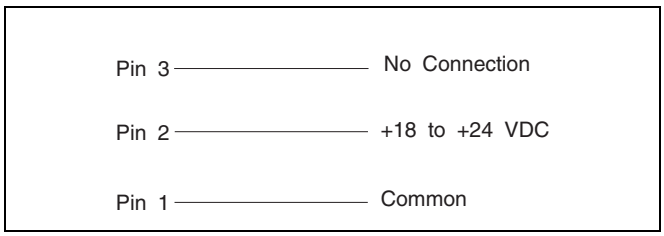


FIGURE 3. LINE LOOP Connector Wiring for 2-Channel Operation with Non-RTS Power Supply.

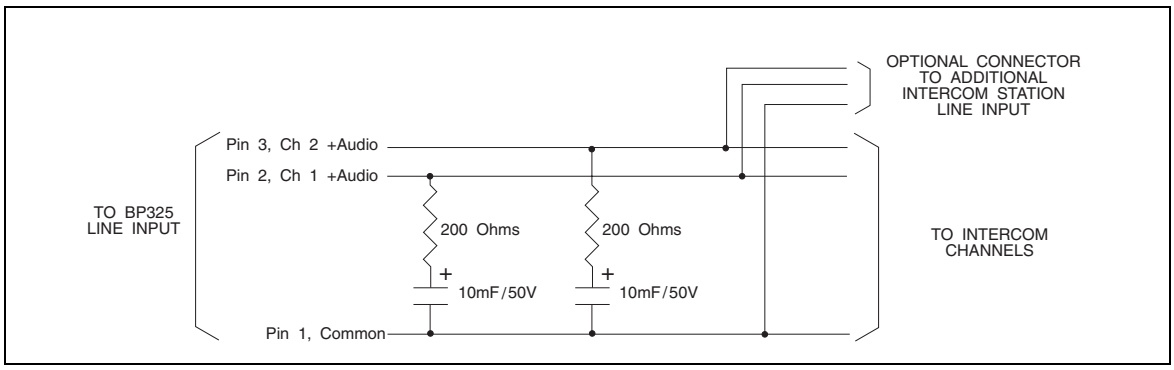


FIGURE 4. LINE INPUT Connector Wiring for 2-Channel Operation with Non-RTS Power Supply

METHOD TWO: TWO CHANNEL OPERATION WITH A NON-RTS POWER SUPPLY

1. Referring to Figure 1, remove all three screws (10a and 10b) on the back connector panel of the BP325. Remove the rear cover/belt clip assembly.
2. There are two connectors that connect the main circuit board to the front panel circuit board. Pry the tabs on these two connectors to disconnect them. Remove the back connector panel and main circuit board from the belt pack.
3. On the bottom side of the main circuit board, cut the trace as shown in Figure 3.
4. Reassemble the main circuit board and rear connector panel to the belt pack.

Note: If the rear connector panel becomes separated from the main circuit board at any time, make sure that the shaft of the program volume control knob inserts into the program volume control potentiometer on the main circuit board during reassembly.

5. Referring to the label on the inside of the rear cover, unplug the LINE LOOP connector from J6 and plug it into J4.
6. Reassemble the rear cover.
7. Using an XLR-3-32 female receptacle, connect the external power source to the LINE LOOP connector as shown in Figure 4. Connect +DC to pin 2 and connect power supply common to pin 1.

Using an XLR-3-32 male plug, connect intercom channels and termination components as shown in Figure 5. Plug this connector into the LINE INPUT jack of the BP325.

CHAPTER 2

REPLACEMENT PARTS

WHERE TO OBTAIN PARTS

Parts may be obtained directly from RTS at:

TELEX/RTS SYSTEMS
Attn: Factory Service
8601 East Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.

MECHANICAL PARTS

(Reference AS3233 Drawing)

Final Assembly
(Refer to AS6738 Drawing for Item No. locations)

Item No.	Qty	Description	RTS Part No.
1	1	Front/ Top Panel Assy	9020673700
2	1	Rear Panel Assy	9020673600
4	1	Bottom Case with Clip	9020563500
6	3	Screw, #4-40 X 3/4”	1008407600
7	1	Label, Programming Instr	9170684200
8	1	Knob, Program Volume	9160677500
10	1	Label, Belt Clip	9170688400
11	1	Label, Serial Number	3101001700

Front/Top Panel Assy
(Refer to AS6737 Drawing for Item No. locations)

Item No.	Qty	Description	RTS Part No.
1	1	Front Case	9020563601
2	1	Front Panel Circuit Board Assy	9030663400
3	1	Main Circuit Board Assy	9030663500
4	3	Screw, #4-40 X 3/8”	51856035
5	1	Button, Talk CH 1	9160563603
6	1	Button, Talk CH 2	9160563604
7	1	Button, Call	9160563605
8	1	Lens, Call	9150563606
9	2	Knob	9160563602
10	2	Knob Body, Nylon	9160563601
11	6	Jumper, E-Cam 282-11-10	2515001500
12	2	Pushnut Fastener	1005021100

Rear Panel Assy
(Refer to AS6736 Drawing for Item No. locations)

Item No.	Qty	Description	RTS Part No.
1	1	Rear Panel	9080563700
2	1	Connector, Male insert, 3-pin	2018006900
3	1	Connector, Female insert, 4-pin (3 pcs) (includes items 7 & 8)	2019001900

Rear Panel Assy
(Refer to AS6736 Drawing for Item No. locations)

Item No.	Qty	Description	RTS Part No.
4	1	Connector, Female insert, 5-pin (3 pcs) (includes items 7 & 8)	2019002000
5	1	Connector, Female insert, 3-pin (3 pcs) (includes items 7 & 8)	2019002100
7	3	Latch (included with items 3-5)	1005017700
8	3	Spring, (included with items 3-5)	1005017600
9	3	Release Lever	9160563701
10	2	Housing, 3-pin	59958003
11	2	Housing, 6-pin	59958006
12	15	Crimp Connector (for items 10 and 11)	59958200

ELECTRICAL PARTS

Electrical Parts
Main Circuit Board

Ref No.	Description	RTS Part No.
C1	Capacitor, EL, SM, 47 UF, 10V	102884215 T
C2	Capacitor, CM, SM, 10 PF, 50V	102879204 T
C3	Capacitor, EL, SM, 47 UF, 10V	102884215 T
C4, C5	Capacitor, CM, SM, 1000 PF, 50V	102884216 T
C6 - C8	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
C9	Capacitor, EL, SM, 47 UF, 10V	102884215 T
C10	Capacitor, CM, SM, 470 PF, 50V	102879212 T
C11	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
C12	Capacitor, EL, SM, 22 UF, 35V	1099R2263 GT
C13	Capacitor, CM, SM, 0.01 UF, 50V	102881339 T
C14	Capacitor, CM. SM, 1000 PF, 50V	102879216 T

Electrical Parts Main Circuit Board		
Ref No.	**Description**	**RTS Part No.**
C15	Capacitor, CM, SM, 10 PF, 50V	102879271T
C16	Capacitor, EL, SM, 1 UF, 50V	102884606 T
C17	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
C18 - C20	Capacitor, CM, SM, 10 PF, 50V	102879204 T
C21	Capacitor, CM, SM, 10 PF, 50V	102879271T
C22 - C24	Capacitor, EL, SM, 22 UF, 35V	1099R2263 GT
C25	Capacitor, CM, SM, 10 PF, 50V	102879204 T
C26	Capacitor, EL, SM, 22 UF, 35V	1099R2263 GT
C27, C28	Capacitor, CM. SM, 10 PF, 50V	102879204 T
C29	Capacitor, CM, SM, 10 PF, 50V	102879271T
C30 - C32	Capacitor, EL, SM, 22 UF, 35V	1099R2263 GT
C33	Capacitor, CM. SM, 10 PF, 50V	102879204 T
C34, C35	Capacitor, EL, XM, 1 UF, 50V	102884606 T
C36, C37	Capacitor, CM, SM, 1000 PF, 50V	102879216 T
C38	Capacitor, EL, SM, 1 UF, 50V	102884606 T
C39	Capacitor, CM, SM, 10 PF, 50V	10287927T
C40	Capacitor, EL, SM, 47 UF, 10V	102884215 T
C41	Capacitor, EL, RAD, 2200 UF, 16V	1502R2284 E
C42, C43	Capacitor, EL, SM, 47 UF, 10V	102884215 T
C44, C45	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
C46	Capacitor, EL, SM, 22 UF, 35V	1099R2263 GT
C100, C101	Capacitor, EL, SM, 1 UF, 50V	102884606 T
C102, C103	Capacitor, CM, SM, 10 PF, 50V	102879271T
C104,	Capacitor, CM. SM, 10 PF, 50V	102879204 T
C105	Capacitor, CM, SM, 10 PF, 50V	102879271T
C106	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
C107	Capacitor, CM, SM, 1000 PF, 50V	102879216 T

Electrical Parts Main Circuit Board		
Ref No.	**Description**	**RTS Part No.**
C108, C109	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
C110	Capacitor, EL, SM, 47 UF, 10V	102884215 T
C111	Capacitor, CM SM, 0.1 UF, 50V	102880226 T
C112	Capacitor, CM, SM, 1000 PF, 50V	102879216 T
C113, C114	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
C115	Capacitor, EL, SM, 47 UF, 10V	102684215 T
C116, C117	Capacitor, EL, SM, 1 UF, 50V	102684606 T
CC1 - CC7	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
CC10 - CC14	Capacitor, CM, SM, 0.1 UF, 50V	102880226 T
D1 - D3	Diode, SM, Switching, BAV70	102252000 T
D4, D5	Diode, 1N6481	16016481S MT
D6	Diode, Suppressor, ISMC33A	16010004S MT
D7 - D13	Diode, SM, Switching, BAV70	102252000 T
D101 - D103	Diode, SM, Switching, BAV70	59180303
FB1, FB2	#73 Shield Bead	59180303
J1	Jack, PC, MT, 3/8”H	2013004900
J2, J3	Header, 6-Pin	59958106
J4 - J7	Header, 3-Pin	59958103
J8, J9	Connector, 6-Position, JST FJ-6P	20070143S M
Q1	Transistor, FET, SST5484	16025484S MT
Q2, Q3	Transistor, SM, SI NPN, MMBT5088	102210000 T
Q10	Transistor, FET MMBT5087	16025087S MT
Q11	Transistor, SM, SI NPN, MMBT5088	102210000 T
Q12 - Q14	Transistor, FET, MMBT5087	16025087S MT
Q15	Transistor, SM, SI NPN, MMBT5088	102210000 T

Electrical Parts Main Circuit Board		
Ref No.	**Description**	**RTS Part No.**
R1, R2	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223 T
R3	Resistor, SM, 1K Ohm, 5%, 1/8W	102513102 T
R4	Resistor, SM, 301 Ohm, 1%, 1/8W	102404146 T
R5	Resistor, SM, 3.01K Ohm, 1%, 1/ 8W	102404246 T
R6	Testor, SM, 301 Ohm, 1%, 1/8W	102404146 T
R7	Resistor, SM, 3.01K Ohm, 1%, 1/ 8W	102404246 T
R8	Resistor, SM, 1K Ohm, 5%, 1/8W	102513102 T
R9, R10	Resistor, SM, 620 Ohm, 5%, 1/8W	102513621T
R11	Resistor, SM, 100K Ohm, 5%, 1/ 8W	102513104 T
R12, R13	Resistor, SM, 22 Ohm, 5%, 1/8W	102513220 T
R14	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223 T
R15 - R17	Resistor, SM, 5.1mg Ohm, 5%, 1/ 8W	102513515 T
R18	Resistor, SM, 200 Ohm, 5%m 1/8W	102513201T
R19	Resistor, SM, 100K Ohm, 5%, 1/ 8W	102513104 T
R20	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223 T
R21	Resistor, SM, 100K Ohm, 5%, 1/ 8W	102513104 T
R22	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223 T
R23	Resistor, SM, 100K Ohm 5%, 1/8W	102513104 T
R24	Resistor, SM, 15K Ohm, 5%, 1/8W	102513153 T
R25	Resistor, SM, 10K Ohm, 5%, 1/8W	102513103 T
R26	Resistor, SM, 200 Ohm, 5%, 1/8W	102513201T
R27	Resistor, SM, 100 Ohm, 5%, 1/8W	102513101T
R28	Resistor, SM, 100K Ohm, 5%, 1/ 8W	102513104 T
R29	Resistor, SM, 1K Ohm, 5%, 1/8W	102513102 T
R30	Resistor, SM, 10K Ohm, 5%, 1/8W	102513103 T
R31	Resistor, SM, 1K Ohm, 5%, 1/8W	102513102 T

Electrical Parts Main Circuit Board		
Ref No.	**Description**	**RTS Part No.**
R32	Resistor, SM, 220K Ohm, 5%, 1/ 8W	102513274 T
R33	Resistor, SM, 1K Ohm, 5%, 1/8W	102513102 T
R34	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223 T
R35	Resistor, SM 68K Ohm, 5%, 1/8W	102513683 T
R36 - R38	Resistor, SM. 22K Ohm, 5%, 1/8W	102513223 T
R39	Potentiometer, Linear, 10K Ohm, 25%, 0.1W	14090065S MT
R40, R41	Resistor, SM, 60.4K Ohm, 1%, 1/ 8W	102404375 T
R42, R43	Resistor, SM, 20K Ohm, 1%, 1/8W	102404329 T
R44	Resistor, SM, 100 Ohm, 5%, 1/8W	102513101T
R45	Resistor, SM, 100K Ohm, 5%, 1/ 8W	102513104 T
R46	Resistor, SM, 22K Ohm, 5%,1/8W	102513223 T
R47	Resistor, SM, 68K Ohm, 5%, 1/8W	102513683 T
R48	Resistor, SM, 22K Ohm, 5% 1/8W	102513223 T
R49	Resistor, SM, 1K Ohm, 5%, 1/8W	102513102 T
R50, R51	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223 T
R52	Potentiometer, Linear, 10K Ohm, 25%, 0.1W	14090065S MT
R53, R54	Resistor, SM, 60.4K Ohm, 1% 1/ 8W	102404375 T
R55, R56	Resistor, SM, 20K Ohm, 1%, 1/8W	102404329 T
R57	Resistor, SM, 100 Ohm, 5%, 1/8W	102513101T
R58 - R60	Resistor, SM, 100K Ohm, 5%, 1/ 8W	102513104 T
R61	Resistor, SM, 60.4K Ohm, 1%, 1/ 8W	102404375 T
R62	Resistor, SM, 10K Ohm, 1%, 1/8W	102404300 T
R63	Resistor, SM, 60.4K Ohm, 1%, 1/ 8W	102404375 T
R64	Resistor, SM, 10K Ohm, 1%, 1/8W	102404300 T
R65	Trimpot, 50K	1412100601
R66	Resistor, SM, 10K Ohm, 5%, 1/8W	102513103 T

Electrical Parts
Main Circuit Board

Ref No.	Description	RTS Part No.
R67	Resistor, SM, 100K Ohm, 5%, 1/8W	102513104T
R68	Resistor, SM, 10K Ohm, 5%, 1/8W	102513103T
R69	Resistor, SM, 2.7 Ohm, 5%, 1/8W	1025132R7T
R70	Resistor, SM, 10K Ohm, 5%, 1/8W	102513103T
R71	Resistor, SM, 1.1K Ohm, 5%, 1/8W	102513112T
R72	Resistor, SM, 30 Ohm, 5%, 1/8W	102513300T
R73 - R76	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
R77	Resistor, SM, 200 Ohm, 5%, 1/8W	102513201T
R78, R79	Resistor, SM, 100K Ohm, 5%, 1/8W	102513104T
R80	Resistor, SM, 22 ohm, 5%, 1/8W	102513220T
R81	Resistor, SM, 30 Ohm, 5%, 1/8W	102513300T
R82 - R84	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
R85	Resistor, SM, 100K Ohm, 5%, 1/8W	102513104T
R101 - R104	Resistor, SM, 100K Ohm, 5%, 1/8W	102513104T
R105	Resistor, SM, 270K Ohm, 5%, 1/8W	102513274T
R106	Resistor, SM 22K Ohm, 5%, 1/8W	102513223T
R107	Resistor, SM, 270K Ohm, 5%, 1/8W	102513274T
R108 - R111	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
R112	Resistor, SM, 2.2mg Ohm, 5%, 1/8W	102513225T
R113 - R115	Resistor, SM, 270K, Ohm, 5%, 1/8W	102513274T
R116 - R118	Resistor, SM, 470K Ohm, 5%, 1/8W	102513474T
R119 - R121	Resistor, SM, 47K Ohm, 5%1/8W	102513473T
R122	Resistor, SM, 3K Ohm, 5%, 1/8W	102513302T

Electrical Parts
Main Circuit Board

Ref No.	Description	RTS Part No.
R123	Resistor, SM, 39 Ohm, 5%, 1/8W	102513390T
R124	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
R125	Resistor, SM, 47K Ohm, 5%, 1/8W	102513473T
R126	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
R127	Resistor, SM, 47K Ohm, 5%, 1/8W	102513473T
R128	Resistor, SM 2.7 Ohm, 5%, 1/8W	1025132R7T
R129	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
R130	Resistor, SM, 2.7 Ohm, 5%, 1/8W	1025132R7T
R131	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
R132 - R136	Resistor, SM, 22K Ohm, 5%, 1/8W	102513223T
RP1, RP2	Resistor, Network, 22K Ohm X 9, Pin 1 COM, 1.5W	1411220200
RR1 - RR6	Resistor, SM, 22 Ohm, 5%, 1/8W	102513220T
Ss1	Switch, DIP, Low Profile	19090002SMS
U1	IC, Dual Op Amp, LM833	16030833SMT
U2	IC, Analog Switch, 4053B	53266123S
U3, U4	IC, SM, LP JFET Input Op Amp, TL062	16030131SMS
U5	IC, SM , Dual Op Amp, MC34072	16030140SMS
U6, U7	IC, SM, LP JFET Input Op Amp, TL062	16030131SMS
U8	IC, Voltage Regulator, LM317	53290000
U10	IC, SM, Adj Micropower VREG, LP2951CM	59631000S
U11	IC, Quad Schmidt 2 Input NAND, 4094B	53266124
U12	IC, HD63701VOCP	1603014400S
U13, U14	IC, Op Amp, National LM386N-1	53281100
U15	IC, SM, DARL Trans Array, ULN2004	16030008SMS
Y100	Crystal, 4 mHz, Fox FPX-SM-4.00M	33010009SM

Electrical Parts Main Circuit Board		
Ref No.	**Description**	**RTS Part No.**
	Connector, St Header, 0.100, M3	2007009900
	Trimpot Shaft	2703002900
	Heatsink	4502001600
	Screw, 4-40 X 1/4” pan head phillips	1008402300
	Nut, 4-40 special, small pattern	1007000700
	Washer, 4-40 compression	1006004100

	Front Panel Circuit Board	
Ref No.	**Description**	**Part No.**
DS1, DS2	LED, Yellow	1801575100
DS3	LED, Red	1801002000
J8, J9	Connector, 6-Pin	2007014400
R1, R2	Pot, 10K, Audio	1406003901
S1 - S3	Switch, Momentary Keyboard	545094001
	Key Cap Extension	701635000

CHAPTER 3

Specifications and Drawings

Drawing Number	Title
9030-6634-000	Front Panel Circuit Board Component Layout
9030-6635-000	Main Circuit Board Component Layout
AS6736	Rear Panel Assembly
AS6737	Front/Top Panel Assembly
AS6738	Final Assembly
SD6634	Schematic Diagram, Front Panel Circuit Board
SD6635	Schematic Diagram, Main Circuit Board

Specifications

Dimensions

5.00” High x 3.75” Wide x 2.05” Deep
(127mm x 96.3mm x 52.1mm)

Weight

0.5 pounds (225 grams)

Exterior

Polystyrene and polycarbonate mix; gray textured main body

Power Requirements

Input DC Voltage

=18 to +35 volts DC, operating; -200 to +36 volts DC without damage

DC Current

mA
Average talk + call light: 6 No Signal: 27 milliamperes.
Average talk (25 ohm headphones, 10dB below clipping): 43 0mA

Impedance Across Intercom Line

10,000 ohms typical

Ambient Temperature Range

Operating: 0°C to 50°C (32°F - 122°F)

Storage: -40°C to 125°C (-40°F to 257°F)

Noise Contribution to 200-Ohm Intercom Line

-75 dBu

Headphone Amplifier

Maximum Voltage Gain: 30dB

Frequency Response: 100 Hz to 8 kHz, +/-3 dB

Headphone Impedance: 50 to 600 ohms

Output Power: 150 mW/50 ohms

Output Voltage Level: 8 volt peak-to-peak

Microphone Preamplifier

Maximum Voltage Gain: 54 dB

Frequency Response: 100 Hz to 8 kHz, +/-3 dB

Input Impedance: 1,000 ohms, balanced

Limiter Range: 30 dB

Program Input

Maximum Input Level: +20 dBu

Nominal Input Level: -10 to +8 dBu

Frequency Response: 100 Hz to 12 kHz, +/-3 dB

Monaural Dynamic-mic Headset Connector

XLR-4-31 receptacle (J13)

Pin 1 - Microphone low

Pin 2 - Microphone high

Pin 3 - Common

Pin 4 - Headphone high

Stereo Dynamic-mic Headset Connector

XLR-5-31 receptacle (J14)

Pin 1 - Microphone low

Pin 2 - Microphone high

Pin 3 - Common

Pin 4 - Headphone left high

Pin 5 - Headphone right high

Carbon-mic Headset Connector (J1) - 1/4 inch, 3-conductor Phone Jack

Used for Headset

Tip - Carbon microphone

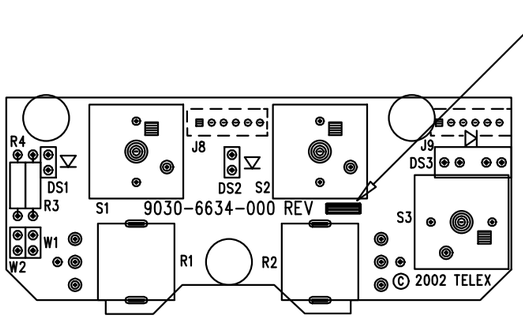
Ring - Headphone

				SHEET	SHEET REVISION STATUS
				REV.	

REVISIONS							
LOC.	REV.	DESCRIPTION	ECO. NO.	DRFT	CHKR	APP	DATE
	C	REVISED AND REDRAWN IN POWER PCB	73821	SX	CBH		6-17-02
	D	ADD: ITEM #8; SWITCH EXTENDER	73963	SX			10-10-02

NOTES:

1. MANUFACTURING TO MARK REV ON BOARD THAT APPEARS ON DRAWING
2. REFERANCE SCHEMATIC DRAWING 9027-6634-000 REV A



-004 QTY.	-003 QTY.	-002 QTY.	-001 QTY.	-000 QTY.	ITEM NO.	REF DESIG.	PART NUMBER	DESCRIPTION
				3	8	XS1, XS2, XS3	701635-000	SWITCH EXTENDER
				.001	7	AR	SS360	CAIG DEOXIT SPRAY 3DS5-6
				2	6	DS1, DS2	1801575100	LED, PY5351K
				1	5	DS3	1801002000	LED, MU16-2105 STANLEY
				3	4	S1, S2, S3	545094-001	KEYSWITCH WITH FIXATION PINS, MX SERIES, MX1A-11NW
				2	3	J8, J9	2007014400	CONNECTOR, JST#06R-F-J
				2	2	R1, R2	1406003901	POT, 10K OHM AUDIO, NOBLES #V012LPV-20F-15A10K
				1	1		9040-6634-00	BP325 FRONT PANEL PCB
					REV	LIST OF MATERIALS		

CAD GENERATED DRAWING

FILE NAME: IC_GROUP/ECAD/BOARDS/6634/REVC/6634C01.PCB

MODEL	NEXT ASS'Y

UNSPECIFIED LIMITS OF TOLERANCE

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.

CONCENTRICITY .010 TIR

ANGLES P1/2D BENDS P2D

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90D

THREADS- EXT. CLASS 2A INT. CLASS 2B

MOLD FINISH: SPI-SPE NO. 3

DRAFT 2D

DECIMAL
.X P.050 IN.
.XX P.030 IN
.XXX P.010 IN.

MACHINED FINISH: 64

DR SX	CK CBH	APP
DATE 6-04-02	SCALE NONE	

DO NOT SCALE DRAWING

TELEX®

MINNEAPOLIS, MINNESOTA

TITLE BP325 FRONT PANEL BOARD ASSEMBLY DRAWING

P/N

SIZE	DWG. NO.
B	9030-6634-000

SHT. OF

PLANT DIST. BE

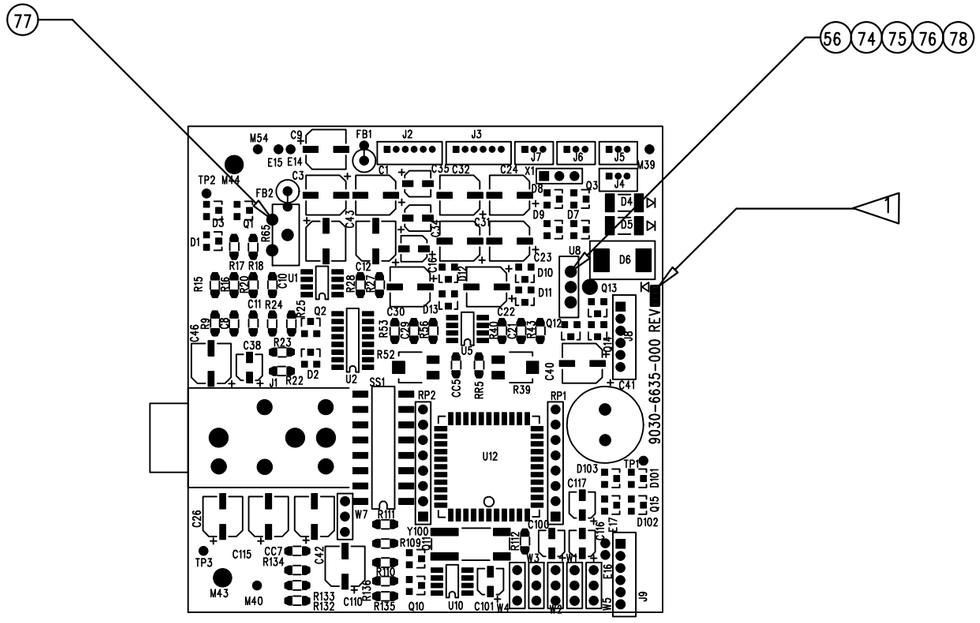
				SHEET	SHEET REVISION STATUS
				REV.	

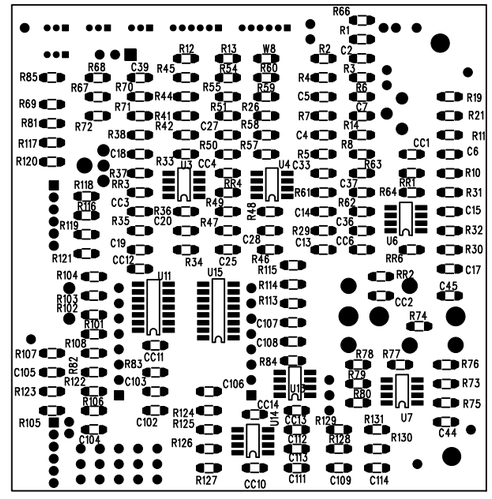
NOTES:

1. MANUFACTURING TO STAMP REV ON BOARD THAT APPEARS ON DRAWING
2. REFERANCE SCHEMATIC DRAWING 90276635-000 REV H.
3. PARTS LIST FILED SEPARATLY 90306635-000 REV H.
4. PARTS LIST FILED SEPARATLY 90306635-001 REV B.

REVISIONS

LOC.	REV.	DESCRIPTION	ECO. NO.	DATE	DRFT	CHKR	APP
	D	REVISED & REDRAWN	62113	CBH			11/25/97
	E	CHANGED NOTES 2 & 3	63577	CBH			11/9/98
	F	ADD BALLOON 78	63920	JV			1/12/00
	G	CHANGED NOTE 3; ADDED NOTE 4	73472	SX	CBH		6/19/01
	H	CHANGED NOTES 3 & 4	73673	SX			1/7/02





-004 QTY.	-003 QTY.	-002 QTY.	-001 QTY.	-000 QTY.	ITEM NO.	REF DESIG.	PART NUMBER	DESCRIPTION
					REV	LIST OF MATERIALS		

CAD GENERATED DRAWING

FILE NAME: IC_GROUP/ECAD/BOARDS/6635/REVE/6635E12.PCB

MODEL	NEXT ASS'Y

UNSPECIFIED LIMITS OF TOLERANCE

STRAIGHTNESS AND/OR FLATNESS .005 IN./1 IN.

CONCENTRICITY .010 TIR

ANGLES P1/2D BENDS P2D

UNMARKED ANGLES, BENDS AND INTERSECTIONS 90D

THREADS- EXT. CLASS 2A
INT. CLASS 2B

MOLD FINISH: SPI-SPE NO. 3
DRAFT 2D

DECIMAL
.X P.050 IN.
.XX P.030 IN
.XXX P.010 IN.

MACHINED FINISH: 64

DR	CK	APP
CBH		

DATE 1-25-97 SCALE 1:1

DO NOT SCALE DRAWING

TELEX®

MINNEAPOLIS, MINNESOTA

TITLE MODEL BP 325
MAIN BOARD

P/N

SIZE B | DWG. NO. 90306635 | SHT. 1 OF 1

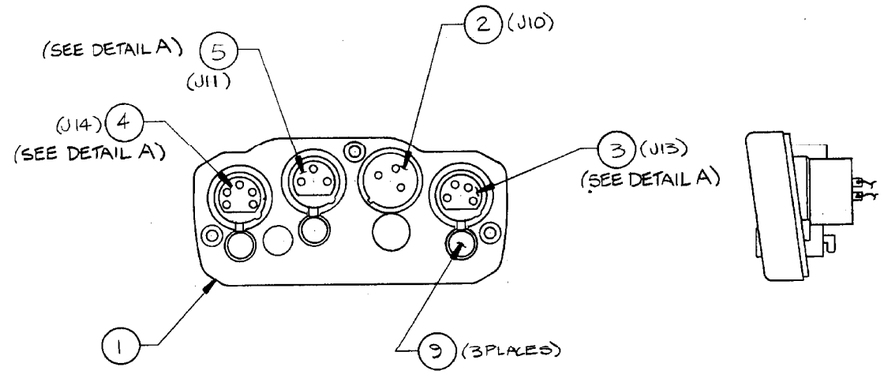
PLANT DIST. B.E.

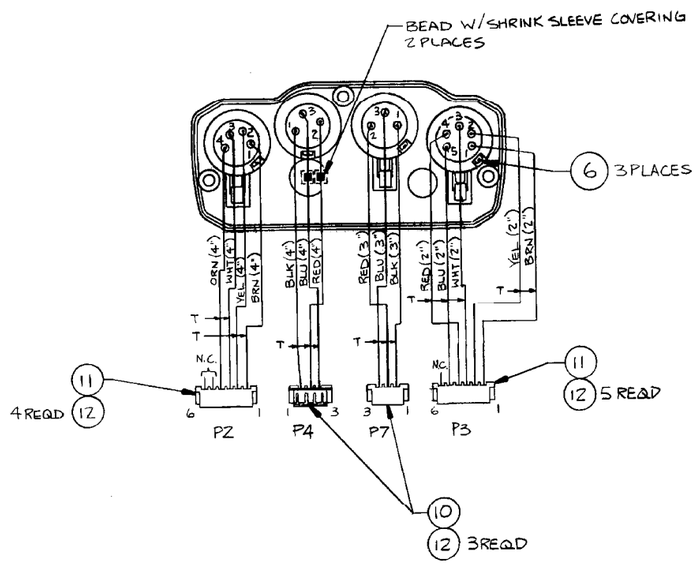
EASH FILE CORP. IRVINE, CA EPH 22

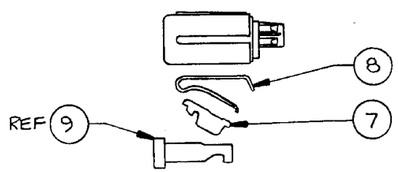
AS6736

ASSY DWG - REAR PNL - BP325 SMT

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ADDED NOTE 1 PER ECO# 3251 RL	10/24/90	GM 10-29-90

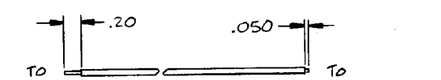






DETAIL A

AXR INSERT ASSY DETAIL (3PLACES)



TYP WIRE STRIPPING

SEE SEPARATE PARTS LIST 9020673600

1. SHRINK SLEEVE ALL WIRE CONNECTIONS TO REAR PANEL WITH 3/16" DIA BLK SLEEVE, 0.40" LONG, (15 PLACES).

NOTES: UNLESS OTHERWISE SPECIFIED

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
REMOVE ALL BURRS & BREAK SHARP EDGES
HOLE TOLERANCES PER ANSI B94.11-1987, R1972
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ±1/16 | DECIMALS X ±.05, .XX ±.03, .XXX ±.010 | ANGLES ±30'

MATERIAL

FINISH

CONTRACT NO. TW SYSTEMS

APPROVALS	DATE
DRAWN R.T. CRUZ	5.24.90
CHECKED	6.8.90
ISSUED	

DO NOT SCALE DRAWING

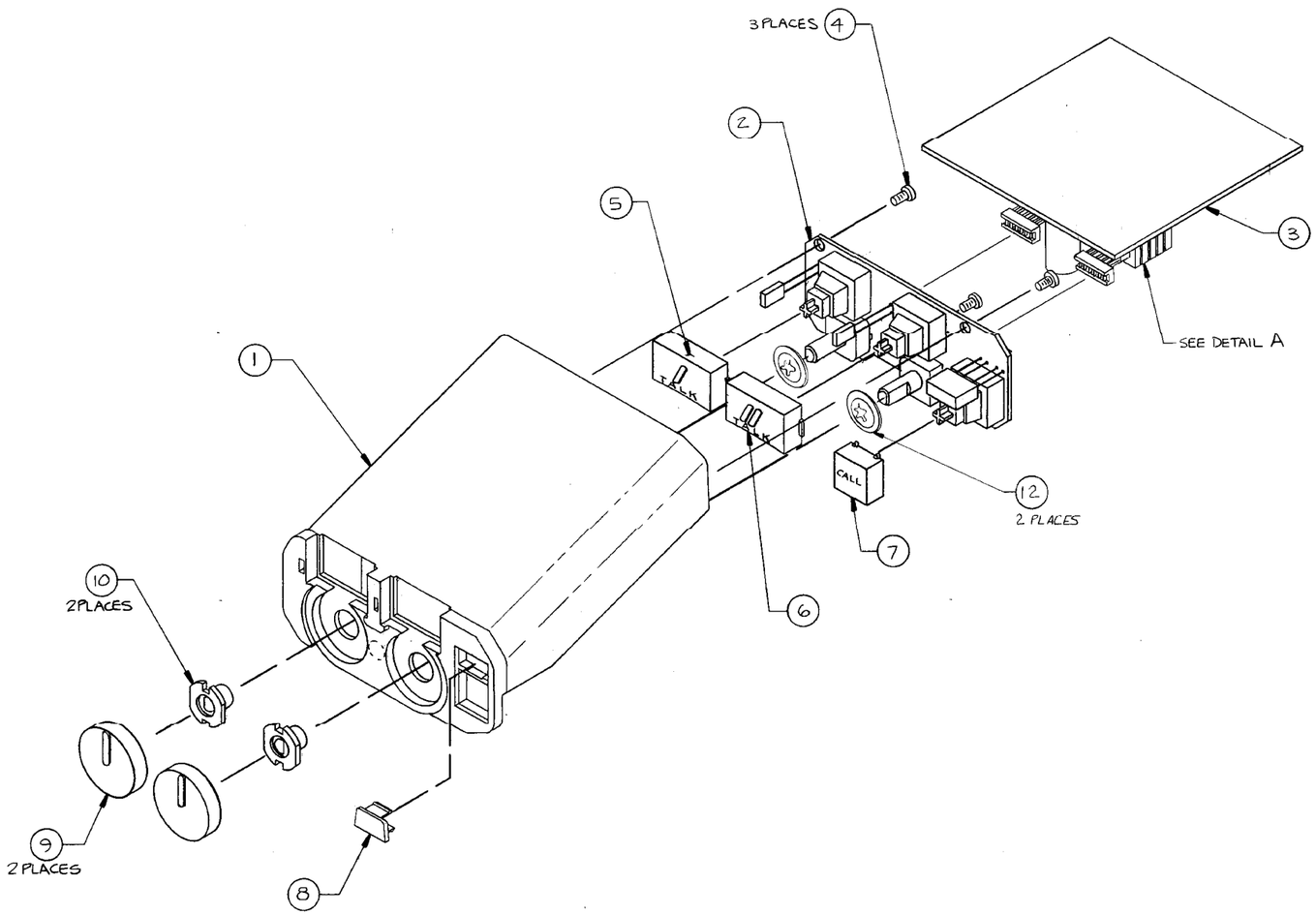
RTS SYSTEMS BURBANK, CALIFORNIA

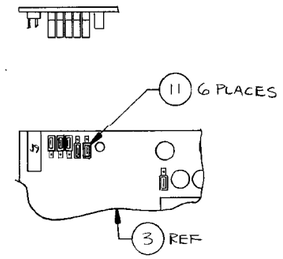
ASSEMBLY DRAWING - REAR PANEL, MODEL BP325 SM

SIZE	FSCM NO.	DWG. NO.	REV.
C	60572	AS6736	A

SCALE — SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	CHGD LOCATION OF ITEM 11 PER ECO# 3251 RR	10-25-90	GM 10-29-90
	B	ADD MECHANICAL FASTENER, BALLOON 12 PER ECO # 54908	12/12/91	MJC GMS M.O.





DETAIL A

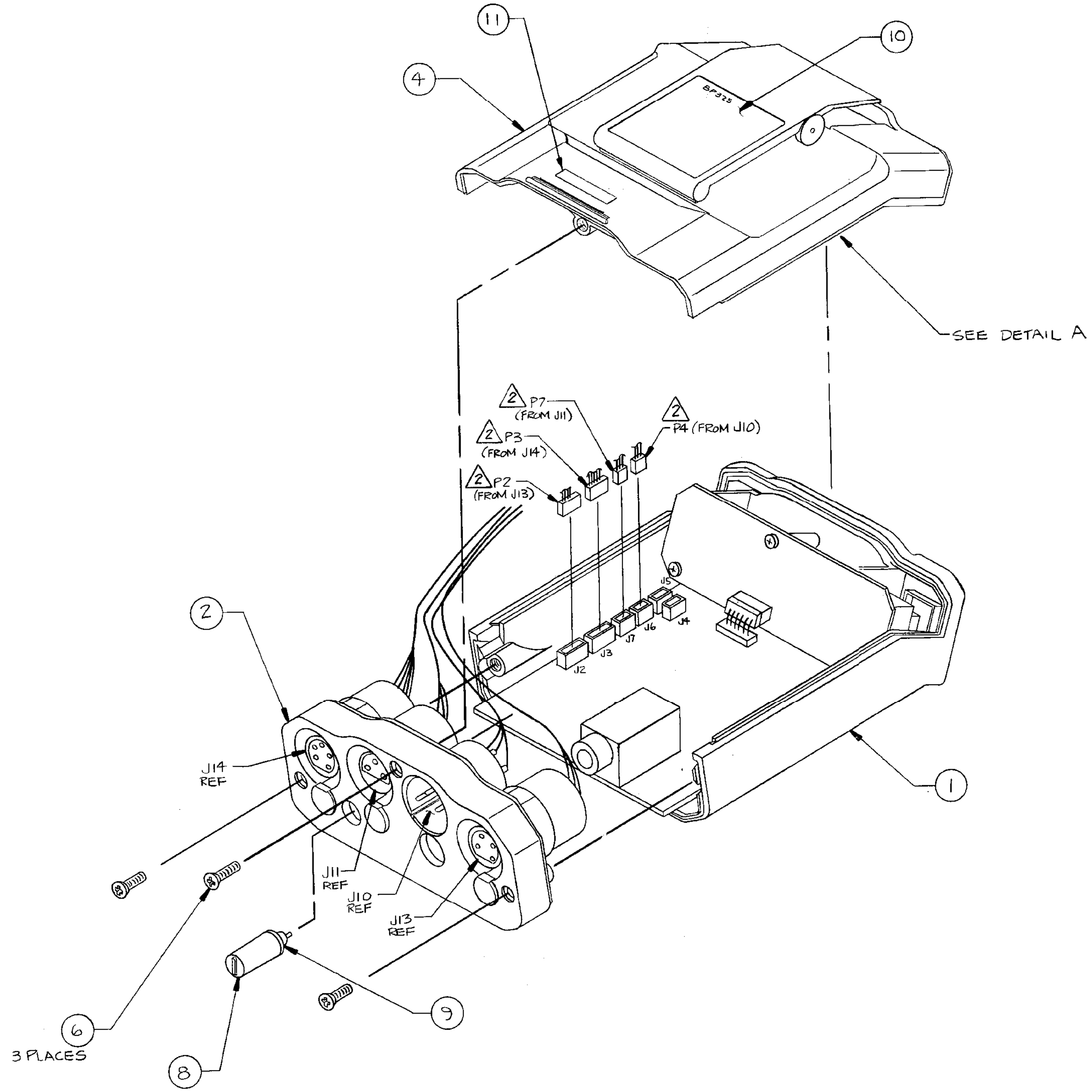
SEE SEPARATE PARTS LIST 9020673700

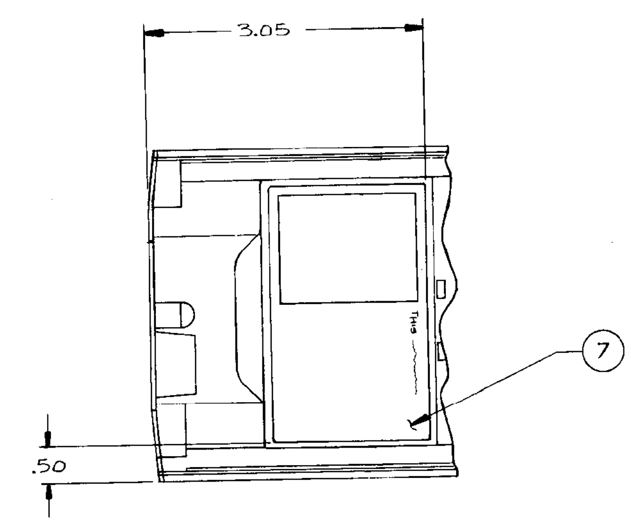
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±	CONTRACT NO. TWI SYSTEMS	RTS SYSTEMS BURBANK, CALIFORNIA
MATERIAL	APPROVALS / DRAWN R.T.CRUZ 5-29-90	ASSEMBLY DRAWING— FRONT/TOP PANEL, BP325 SMT
FINISH	CHECKED 6-8-90	SIZE D FSCM NO. 60572 DWG. NO. AS6737
DO NOT SCALE DRAWING	ISSUED	SCALE — SHEET 1 OF 1

NOTES: UNLESS OTHERWISE SPECIFIED

B.E.

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ADDED NOTE 2 PER ECO# 3251 RTC	10·25·90	GM 10-29-90
	B	UPDATE ARTWORK, ITEM 11 ECO# 564[illegible] BF	10-16-92	JC
	C	CHNG VIEW OF ITEM 11 ECO 60581	5-22-95	JC





DETAIL A

BOTTOM SIDE OF ITEM 4 SHOWN REF

SEE SEPARATE PARTS LIST 9010673800

NOTES: UNLESS OTHERWISE SPECIFIED

1. SEE SCHEMATIC DIAGRAM SD6635 FOR REF.

2 (triangle) ROUTE WIRES AS SHOWN, AWAY FROM HEATSINK.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±	CONTRACT NO. TW SYSTEMS		RTS SYSTEMS BURBANK, CALIFORNIA
	APPROVALS	DATE	FINAL ASSEMBLY — USER STATION, PROGRAMMABLE MODEL BP325 SMT
MATERIAL	DRAWN R.T.CRUZ	5·30·90	
FINISH	CHECKED E.O.	6·8·90	SIZE D · FSCM NO. 60572 · DWG. NO. AS6738
DO NOT SCALE DRAWING	ISSUED		SCALE — · SHEET 1 OF 1

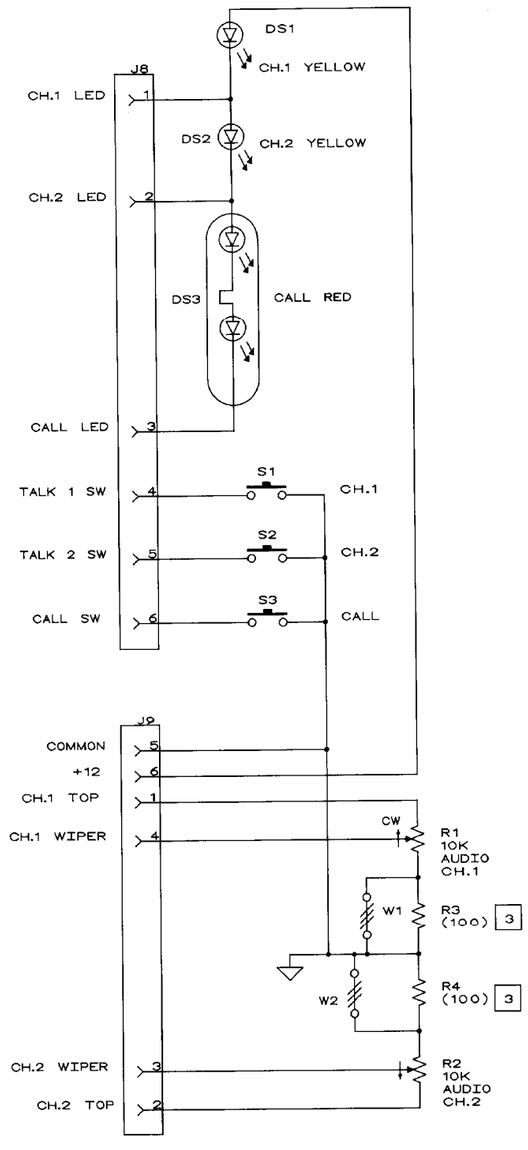
3E, G

EASN FILE CORP. IRVINE, CA | EFN 82

SD 6634 | 1 OF 1

SCHEM - FRONT PANEL BRD. BP325SM

Zone	Rev	Description	Date	Apprv
	A	UPDATE PER DESIGN REQUIREMENTS	5-16-90	



3 R3/R4 NORMALLY NOT INSTALLED. W1/W2 ARE CUTTABLE TRACES.

2. ALL CAPACITORS ARE IN MICROFARADS/VOLTS.

1. ALL RESISTORS ARE IN OHMS, 1/8W, 5% CARBON FILM.

NOTES: UNLESS OTHERWISE SPECIFIED

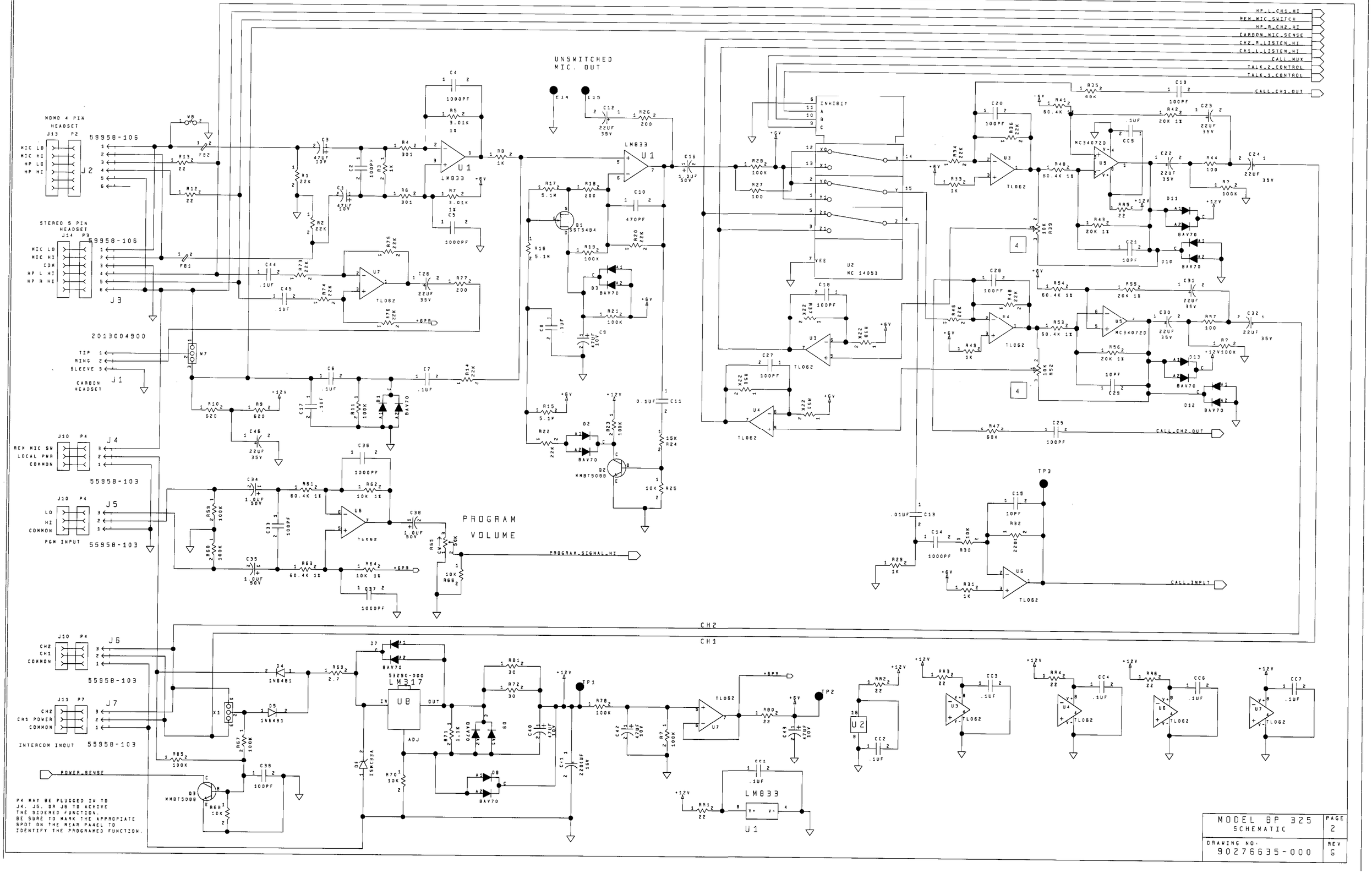
CONTRACT NO.	RTS SYSTEMS Burbank, California		
Drawn R.NEILSON	SCHEMATIC DIAGRAM, FRONT PANEL BOARD, MODEL BP325SM		
Checked			
Issued	SIZE C	FSCM 60572	DWG NO SD6634 REV A
	DATE 2-13-90	S6634A01	SHEET 1 of 1

REVISION RECORD							
LOC.	REV.	DESCRIPTION	ECO NO.	DRFT	CHKR	APP	DATE
	F	REVISED & REDRAWN	62113	CBH			11-24-97
	G	RENAME C42-C43	63577	CBH			11-9-98

TALK 1 SW
TALK 2 SW
CALL SW
CH1 WIPER
CH1 TOP
CH2 WIPER
CH2 TOP
CH1 LED
CH2 LED
CALL LED
CALL XMIT DISABLE
MOM ONLY CH.2
TALK 2 DIS.
TALK 2 DIS.
MOM ONLY CH. 1
TALK OFF TX ENABLE
X
TALK OFF RCV. ENABLE
TALK_2_CONTROL
TALK_1_CONTROL
CALL_MUX
CALL_CH2_OUT
CALL_CH1_OUT
CARBON_MIC_SENSE
CALL_INPUT
REM_MIC_SWITCH
POWER_SENSE
HP_L_CH1_HI
HP_R_CH2_HI
CH2_R_LISTEN_HI
CH1_L_LISTEN_HI
PROGRAM_SIGNAL_HI
MONO
STEREO

		DR. CBH	CK.	APP.	TITLE: MODEL BP325 BELTPACK SCHEMATIC
		DATE 11-24-97			
		TELEX COMMUNICATIONS, INC MINNEAPOLIS, MINNESOTA			SIZE D
		MODEL	NEXT ASSBY		DWG. NO. 902766 35-000
					SHT. 1 OF 2 REV G

VIEWLOGIC WORKVIEW CAD GENERATED DRAWING
FILENAME: IC_GROUP\SCHEMA~1\6635\REVF\6635F



MODEL BP 325 SCHEMATIC	PAGE 2
DRAWING NO. 90276635-000	REV G

COMMUNICATIONS

BE HEARD

12000 Portland Avenue South • Burnsville, MN 55337 • U.S.A