



DO IT YOURSELF AUDIO ISOLATION AMPLIFIER



TYPICAL MONOPHONIC
AND STEREO SYSTEMS
SHOWN

REVISION -E- 22 JAN 04

NOTE:

1. OPERATING VOLTAGE: 10.5 TO 30 VDC
2. OPERATING CURRENT: 0.05A MAX
3. MONOPHONIC INPUTS MIXED TO BOTH CHANNELS: 3
4. STEREO INPUTS: 1 PAIR
5. OUTPUT POWER: 100 MW PER CHANNEL
6. RESISTORS R103 THROUGH R107 ARE SELECTED TO EQUALIZE VOLUME LEVELS BETWEEN AUDIO SOURCES. START WITH 150 OHM RESISTORS IN ALL 5 LOCATIONS (DIGIKEY 150EBK-ND). FOR SOURCES WITH ADJUSTABLE VOLUME CONTROLS, THE GOAL IS TO ACHIEVE NORMAL LISTENING LEVELS WITH SOURCE CONTROL AT 1/3 TO 1/2 OF FULL TRAVEL. ADJUST RESISTOR VALUES UPWARD TO DECREASE VOLUME. THEN ADJUST RESISTORS FOR FIXED SOURCES (WARNING TONES, ETC) TO ACHIEVE LEVEL COMPATABLE WITH NORMAL LISTENING LEVELS FOR OTHER SOURCES.
7. EVERY AUDIO SYSTEM WOULD BENEFIT FROM A HEADSET JACK WIRE TO GIVE YOU ACCESS TO THE COMM RADIO EVEN IF THE AUDIO AMPLIFIER ROLLS BELLY UP OR BECOMES UNPOWERED. WIRE AS SHOWN HERE. DO THE SAME THING FOR A MICROPHONE JACK UNLESS YOUR INTERCOM SYSTEM HAS A POWER-DOWN BYPASS FEATURE BUILT IN.

14. CONNECTOR PIN NUMBER VARIATIONS: CONNECTOR PIN NUMBERS IN THIS DOCUMENT ASSUMES A 15-PIN MALE SOLDERED TO THE COMPONENT SIDE OF THE BOARD. D-SUB CONNECTORS ARE SYMMETRICAL SO THAT THEY CAN BE INSTALLED ON EITHER SIDE OF THE BOARD WITH A REVERSED NUMBER PATTERN. IF YOU USE OUR ECB AND ASSEMBLE IT LIKE THE PROTOTYPE (CONNECTOR ON SIDE OPPOSITE THE COMPONENTS), THE PINOUTS WILL BE DIFFERENT THAN WHAT IS CALLED OUT IN THIS DRAWING PACKAGE.

FUNCTION NAME	PIN # FOR COMP SIDE CONNECTOR	PIN # FOR SOLDER SIDE CONNECTOR
+14V IN	1	8
L AUDIO OUT	2	7
R AUDIO OUT	3	6
L STEREO IN	4	5
A AUDIO IN	5	4
B AUDIO IN	6	3
C AUDIO IN	7	2
R STEREO IN	8	1

ALL OF THE PINS IN THE SHORT ROW (9 THRU 15) ARE GROUND IRRESPECTIVE OF CONNECTOR ORIENTATION.

15. AN ETCHED CIRCUIT BOARD FOR DIY ASSEMBLY IS AVAILABLE FROM AEROELECTRIC CONNECTION ORDER PART NUMBER AEC9009-301-I

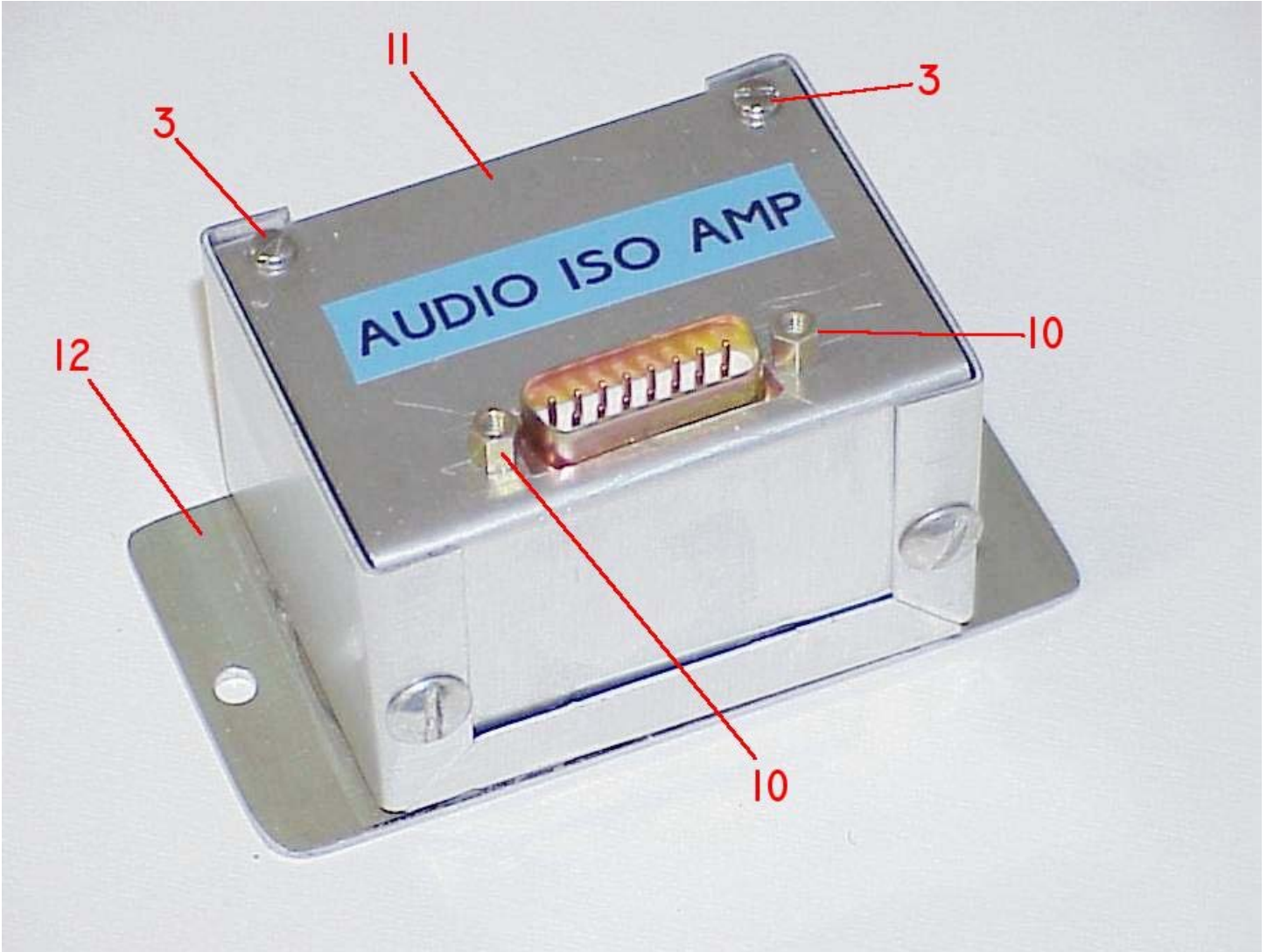
8. SOME ENTERTAINMENT AUDIO SOURCES DO NOT HAVE LOW LEVEL AUDIO OUTPUT CONNECTIONS. IF YOU MUST USE SPEAKER OUTPUT WIRES, YOU MIGHT NEED TO PROVIDE A "DUMMY LOAD" RESISTOR TO MAKE THE SOURCE BELIEVE IT IS DRIVING A SPEAKER. A 10-OHM, 1-WATT RESISTOR WILL USUALLY SUFFICE. SPACES HAVE BE PROVIDED ON THE BOARD TO INSTALL THESE RESISTORS. IF IN DOUBT, TRY RUNNING THE SYSTEM WITHOUT LOAD RESISTORS. LISTEN FOR DISTORTION AT LOW AUDIO LEVELS (VOICE PROGRAM MATERIAL IS BEST FOR THIS). IF NO DISTORTION NOTED, NO LOAD RESISTORS NEEDED.
9. SIGTRONICS HARNESS IS SUPPLIED WITH WIRES COLOR CODED AS SHOWN AT WIRES MARKED (*). IF IT WERE MY AIRPLANE, I'D REPLACE THE COLOR CODED WIRES WITH SHIELDED WIRES AS SHOWN. TERMINATE SHIELDS ONLY AS SHOWN.
10. SHIELDS FOR THESE WIRES CONNECTED THIS END ONLY.
11. GROUND SYMBOL ON SCHEMATIC DENOTES COMMON GROUND FOR THE ASSEMBLY. THIS GROUND SHOULD ISOLATED FROM THE CHASSIS GROUND.
12. WWW.DIGIKEY.COM CAN SUPPLY ALL PARTS.
13. THE AMPLIFIER AS SHOWN PROVIDES APPROXIMATELY UNITY GAIN.

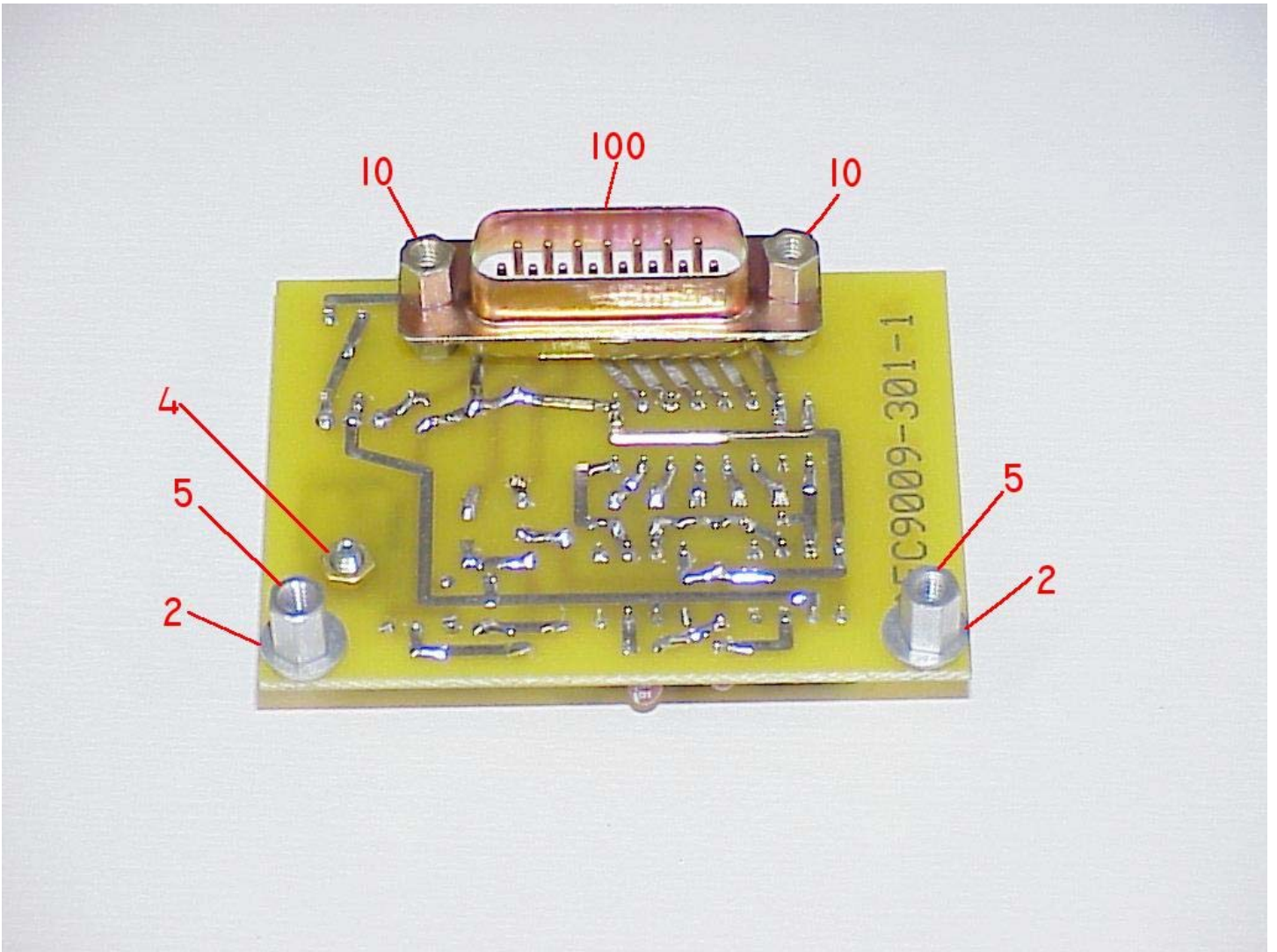
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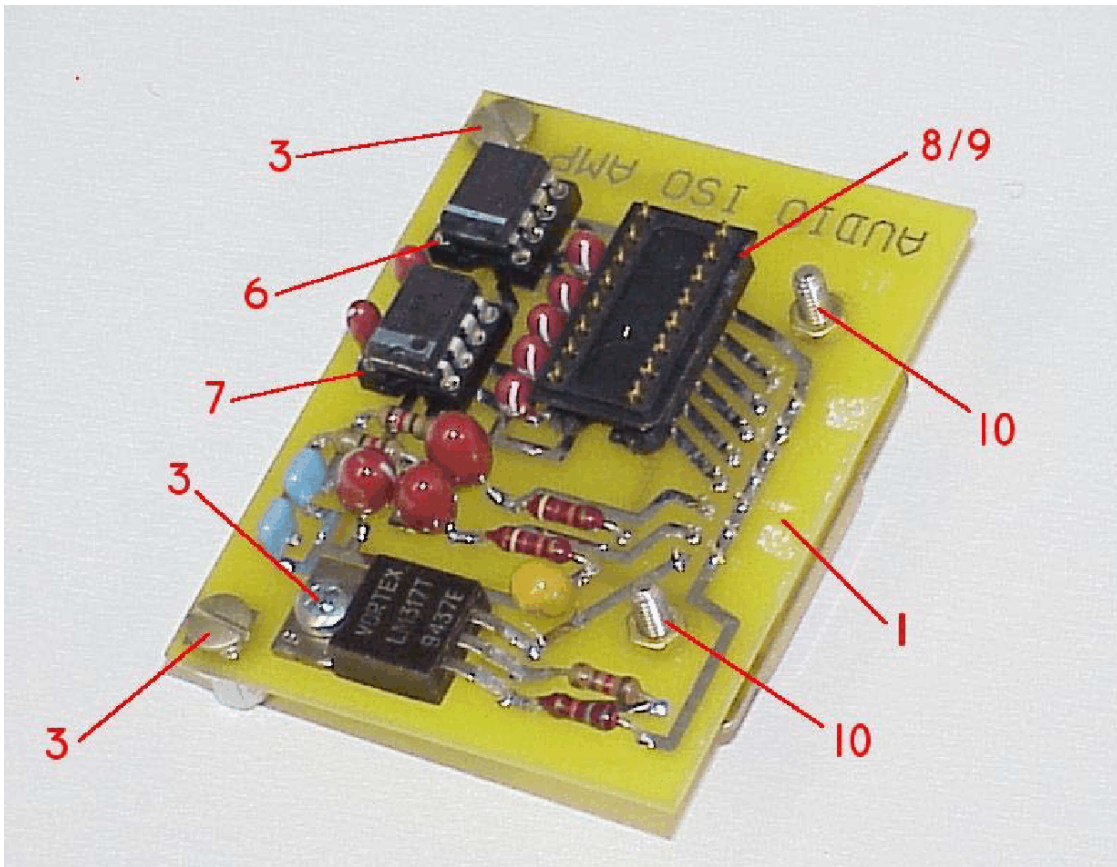
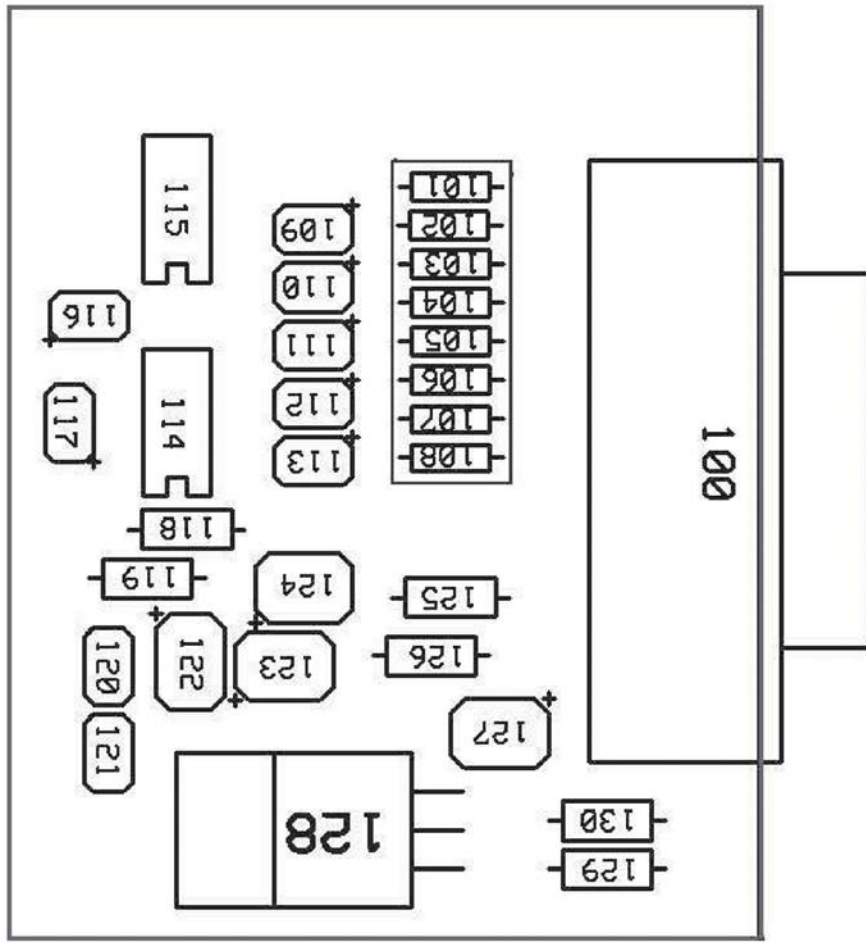
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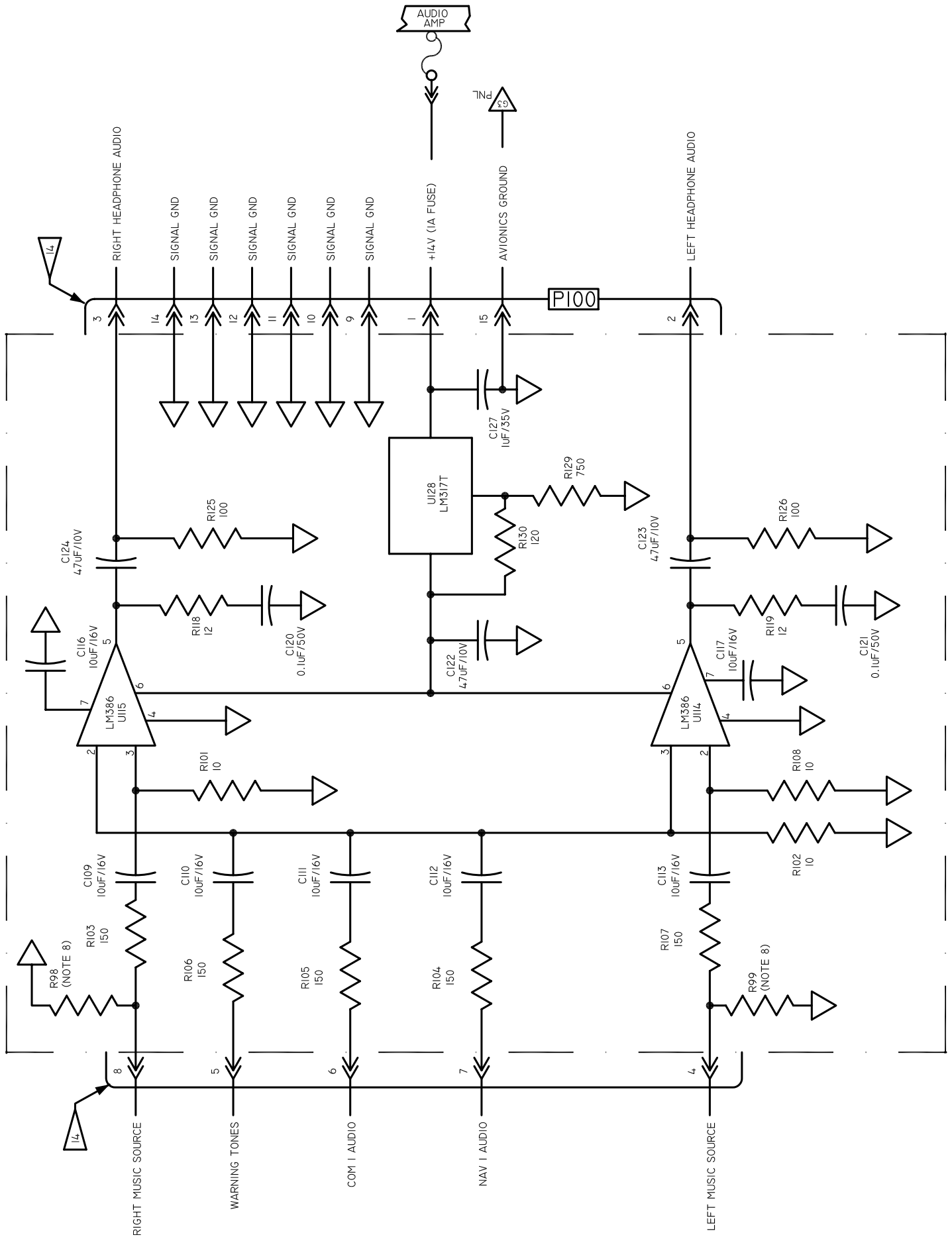
QTY/ASSY		ITEM #	P/N	DESCRIPTION	SOURCE
1	1	130	PI20BACT	120 OHM, 1/4W, 5% CF	DIGIKEY
1	1	129	P750BACT	750 OHM, 1/4W, 5% CF	DIGIKEY
1	1	128	LM317TFS	V-REG, TO220-3	DIGIKEY
1	1	127	399-1429	1.0uF/35V DIP TANT	DIGIKEY
		126	S/A 125		
1	2	125	PI00BACT	100 OHM, 5%, 1/4W CF	DIGIKEY
		124	S/A 122		
		123	S/A 122		
2	3	122	399-1395	47uF, 10V DIP TANT	DIGIKEY
		121	S/A 120		
1	2	120	BCT10ICT	0.1uF/50V MONO CERAMIC	DIGIKEY
		119	S/A 118		
1	2	118	PI2BACT	12 OHM, 5%, 1/4W CF	DIGIKEY
		117	S/A 109		
		116	S/A 109		
		115	S/A 114		
1	2	114	LM386N-1	AUDIO AMP, 8-DIP	DIGIKEY
		113	S/A 109		
		112	S/A 109		
		111	S/A 109		
		110	S/A 109		
6	7	109	399-1403	10uF/16V DIP TANT	DIGIKEY
		108	S/A 101		
		107			
		106			
		105			
		104			
		103			
		102	S/A 101		
2	3	101	10EBK	10 OHM, 1/4W, 5% CF	DIGIKEY
1	1	100	4215M	CONNECTOR, DI5M ECB	DIGIKEY
		99	S/A 98		
2	2	98	PI0W-IBK	10 OHM, 1W, 5% CF (NOTE 8)	DIGIKEY
1	1	12	COMM STOCK	ALUM PLATE 2.1 X 3.8 X 0.050	R-SHACK
1	1	11	270-235	2.1 X 2.7 X 1.6 PROJECT BOX	DIGIKEY
1	1	10	A23423	JACKSCREW KIT	DIGIKEY
1	1	9	AI03	HEADER, 16-DIP	DIGIKEY
1	1	8	A24796	IC SOCKET, 16-DIP	DIGIKEY
		7	S/A 6		
1	2	6	A24794	IC SOCKET, 8-DIP	DIGIKEY
4	4	5	1891K	4-40 X .25" X .186 SPACER	DIGIKEY
3	3	4	COMM STOCK	4-40 X.19 HEX NUT (SMALL PATTERN)	
5	5	3	H342	4-40 X .25 PHP STEEL	DIGIKEY
2	2	2	COMM STOCK	#4 FLAT WASHER	
1	1	1	9009-301-1	ECB	AEC
			9009-100-2	ECB ASSY - MONO ISO AMP	DIY FAB
			9009-100-1	ECB ASSY - STEREO ISO AMP	DIY FAB

(SEE NOTE 6)

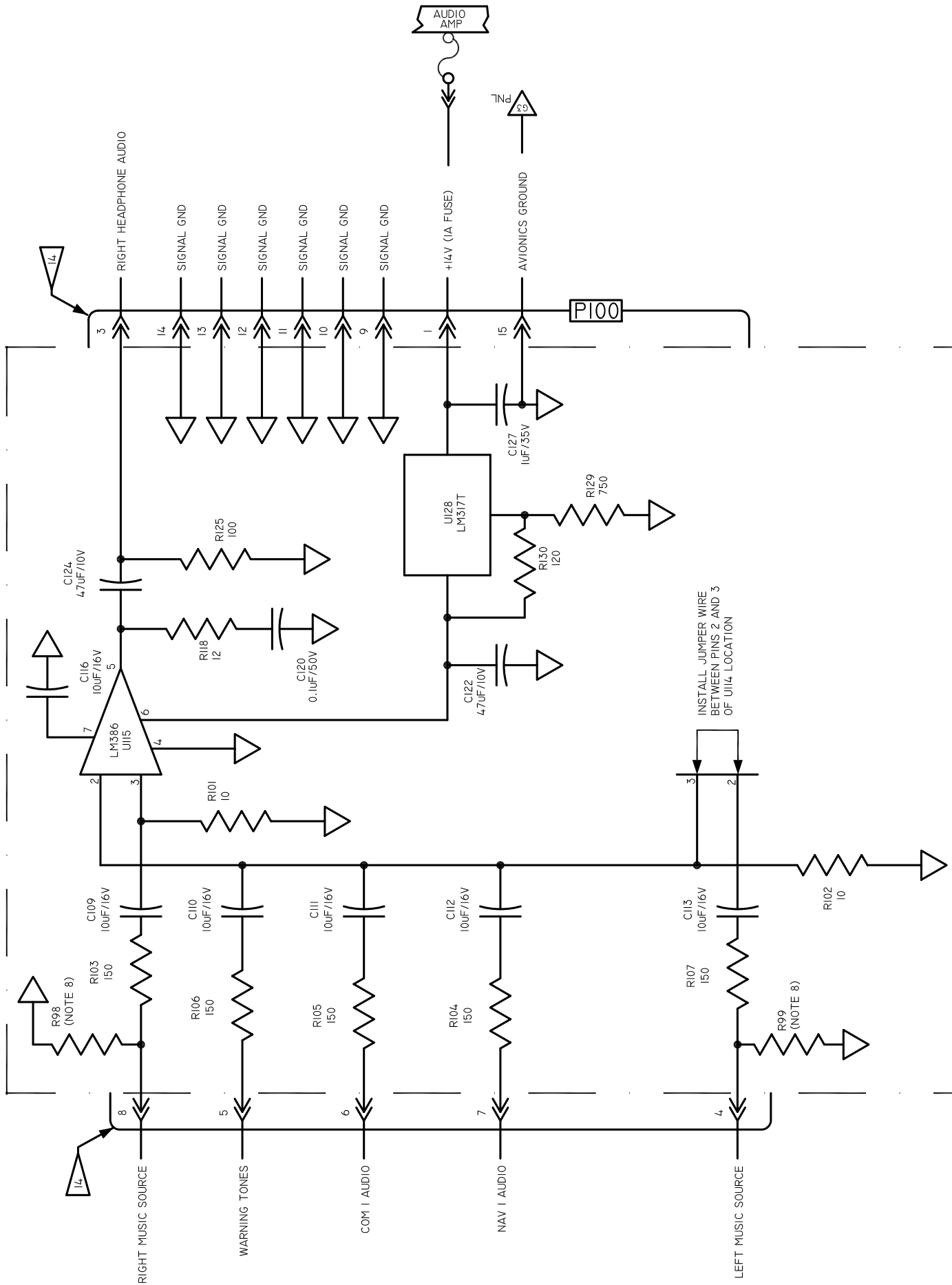






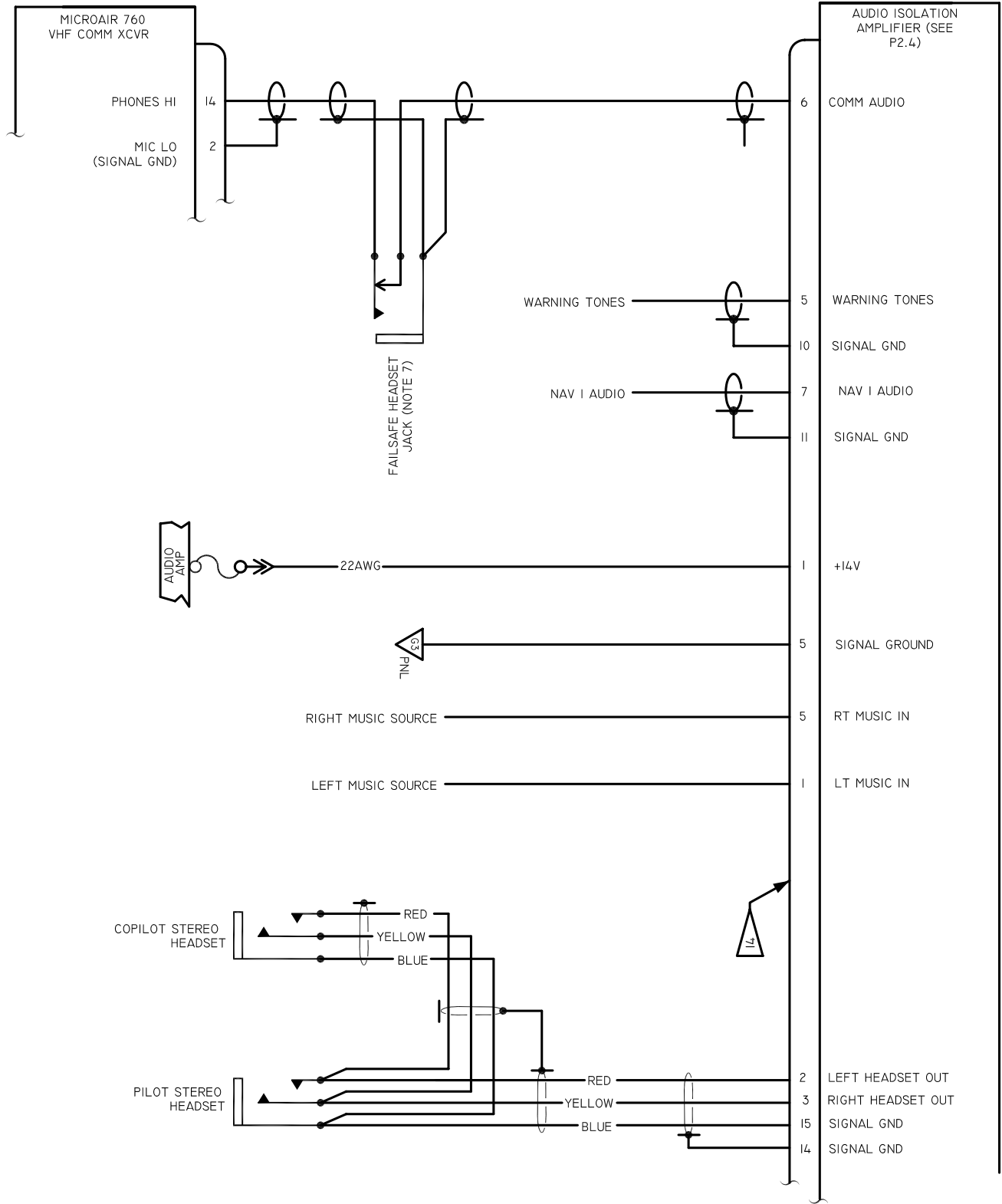


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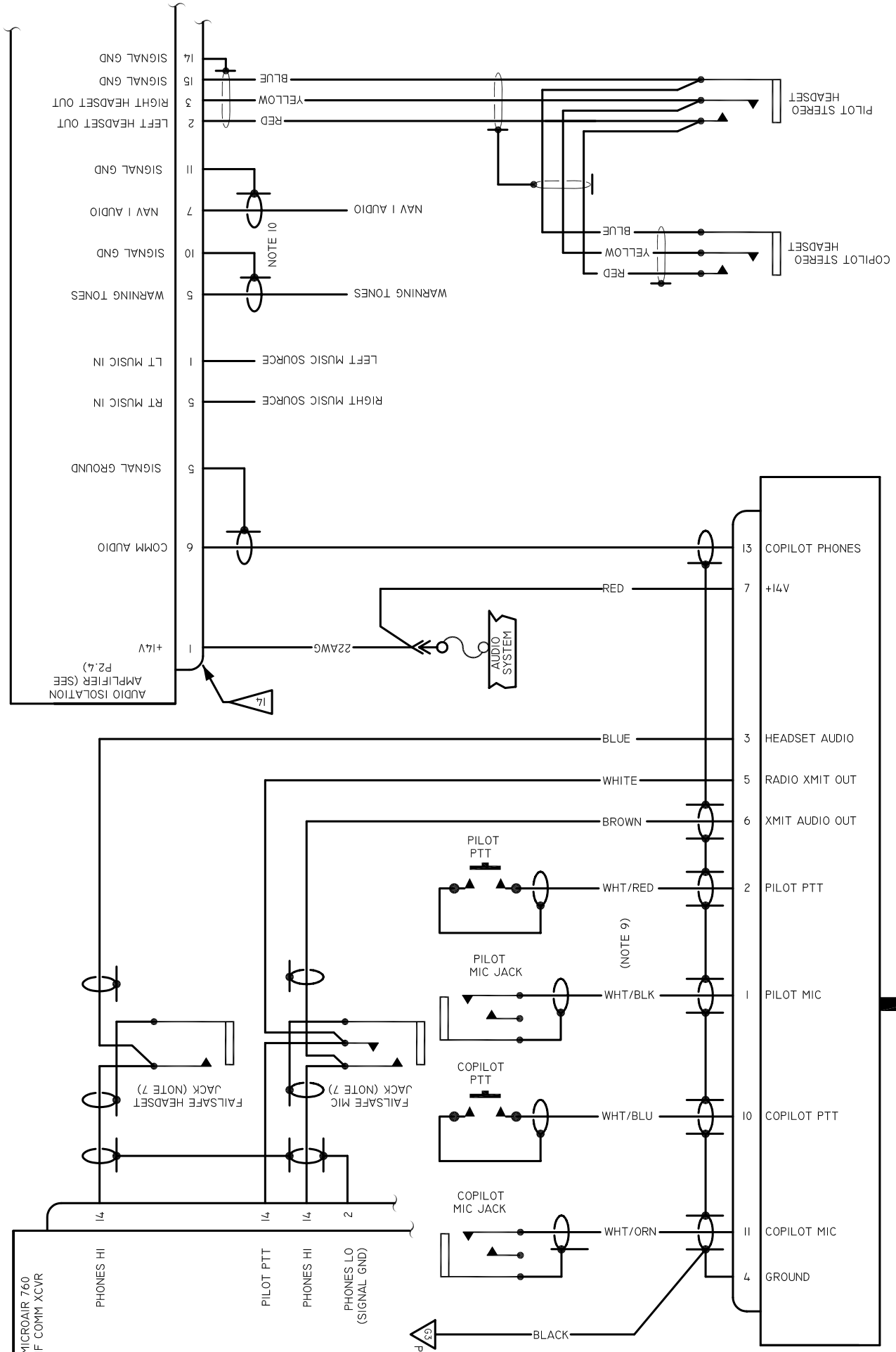


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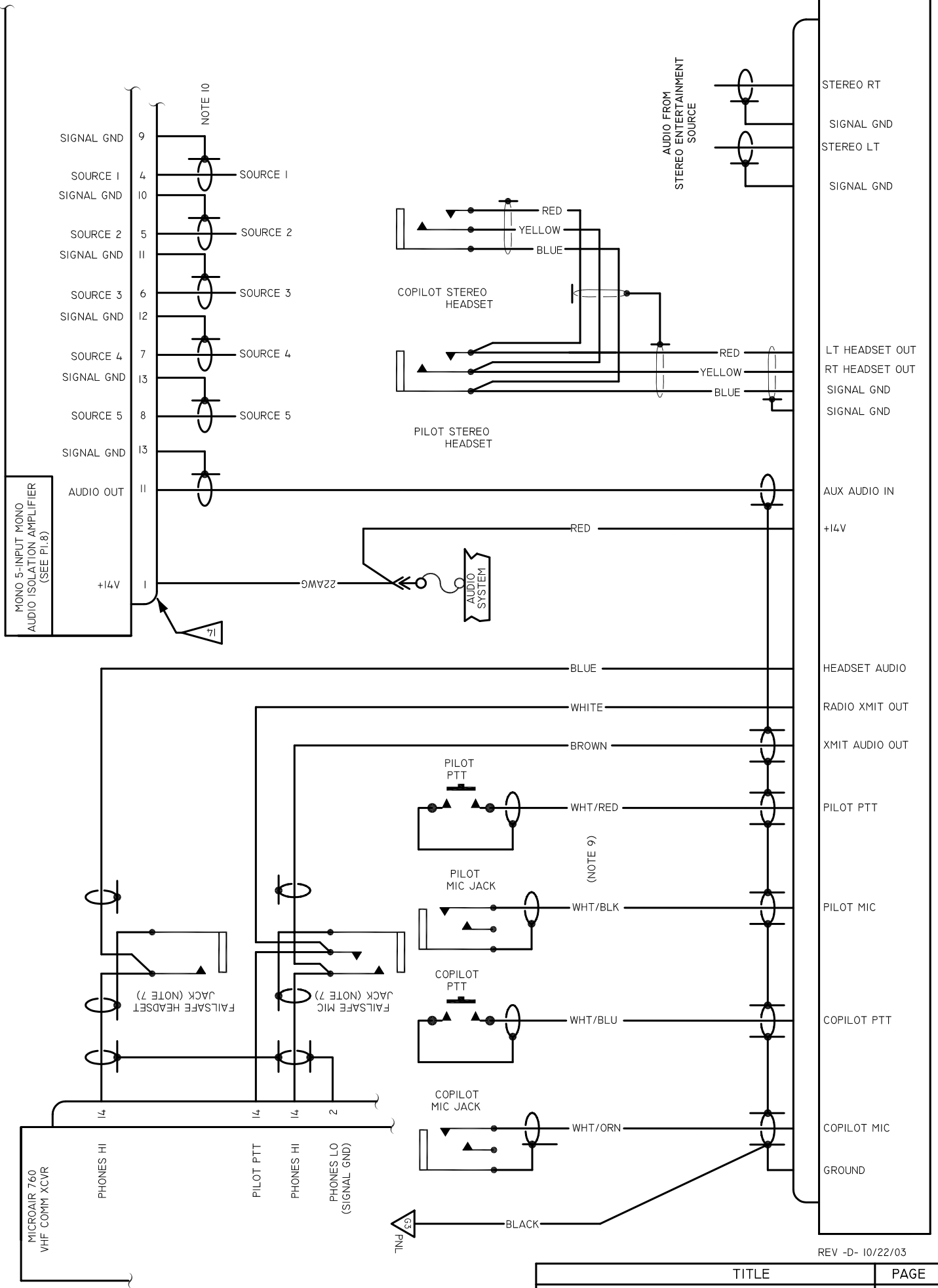


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AUDIO ISOLATION
AMPLIFIER (SEE
P. 7)

SIGTRONICS SPA400
INTERCOM

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SPA400 (MONO) + STEREO ISO AMP	1.10



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