

DSD-1A

Precision Digital FM Stereo Decoder

Guide to Operations

01/96

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WARRANTY AND ASSISTANCE

All Belar products are warranted against defects in materials and workmanship. This warranty applies for one year from the date of delivery, FOB factory or, in the case of certain major components listed in the instruction manual, for the specified period. Belar will repair or replace products which prove to be defective during the warranty period provided that they are returned to Belar prepaid. No other warranty is expressed or implied. Belar is not liable for consequential damages.

For any assistance, contact your Belar Sales Representative or Customer Engineering Service at the Belar factory.

DSD-1A Digital FM Stereo Decoder

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DSD-1A Digital FM Stereo Decoder

1 General Information

1-1 General Description

The Belar DSD-1A FM Digital Stereo Decoder is a DSP based precision stereo decoder. It is designed for any application requiring the precise accurate conversion of analog baseband composite to digital AES/EBU output. The DSD-1A also features precision balanced analog Left, Right, L+R and L-R outputs on XLR-type connectors.

The DSD-1A digitizes the composite and decodes the stereo multiplex signal using digital signal processing techniques. Unlike an analog design, a DSP based design is not subject to variations due to temperature, component aging, or component tolerances. The resulting circuit requires virtually no adjustments, but can achieve extremely tight tolerances. In addition, the DSP design allows the use of FIR linear phase filters which eliminate phase distortion.

1-2 Specifications

Input Composite, 100 k Ω , unbalanced, BNC Connector, 1.0 - 2.0 Vrms (2.8V - 5.7V P-P).

Digital Output Left and Right Digital, AES/EBU, 48 kHz

Analog Output Left, Right, L+R, L-R Audio
Active 50 Ω Differential Output
Level: +10 dBm into 600 Ω , XLR connector
De-emphasis: flat, 50 or 75 μ sec (selectable)

Separation:

Left to Right 80 dB, 10Hz to 15 kHz
Right to Left 80 dB, 10Hz to 15 kHz

Crosstalk:

L + R to L - R 80 dB
L - R to L + R 80 dB
SCA to L + R 90 dB
SCA to L - R 90 dB
SCA Interference 90 dB

Analog Audio Output Specifications

Frequency Response, Left and Right ± 0.05 dB flat, 50 to 15 kHz
 ± 0.25 dB de-emphasized
Harmonic Distortion < 0.01%, 50 to 15 kHz
Intermodulation Distortion < 0.01% (SMPTE)

2 Unpacking

2-1 Initial Inspection

Check the shipping carton for external damage. If the carton exhibits evidence of abuse in handling (holes, broken corners, etc.) ask the carrier's agent to be present when the unit is unpacked. Carefully unpack the unit and inspect all equipment for physical damage immediately after unpacking. Bent or broken parts, dents and scratches should be noted. If damage is found, refer to Paragraph 2-2 for the recommended claim procedure. Keep all packing material for proof of claim or for possible future use.

The DSD-1A is shipped with a Guide to Operations, 4 black rack-mount screws, and a three-wire line cord.

2-2 Claims

If the unit has been damaged, notify the carrier immediately. File a claim with the carrier or transportation company and advise Belar of such action to arrange the repair or replacement of the unit without waiting for a claim to be settled with the carrier.

2-3 Repacking for Shipment

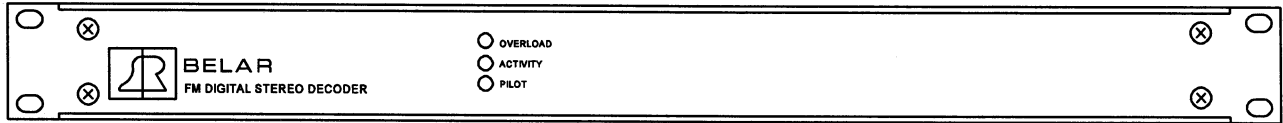
If the unit is to be returned to Belar, attach a tag to it showing owner and owner's address. A description of the service required should be included on the tag. The original shipping carton and packaging materials should be used for reshipment. If they are not available or reusable, Belar can provide a replacement box and packaging at a nominal cost. Alternatively, the unit should be repackaged in the following manner:

- a) Use a double-walled carton with a minimum test strength of 275 pounds.
- b) Use heavy paper or sheets of cardboard to protect all surfaces.
- c) Use at least 4 inches of tightly packed, industry approved, shock absorbing material such as extra firm polyurethane foam or rubberized hair. **Newspaper is not sufficient for cushioning material!**
- d) Use heavy duty shipping tape to secure the outside of the carton.
- e) Use large **FRAGILE** labels on each surface.
- f) Return the unit, freight prepaid. Be sure to insure the unit for full value.

DSD-1A Digital FM Stereo Decoder

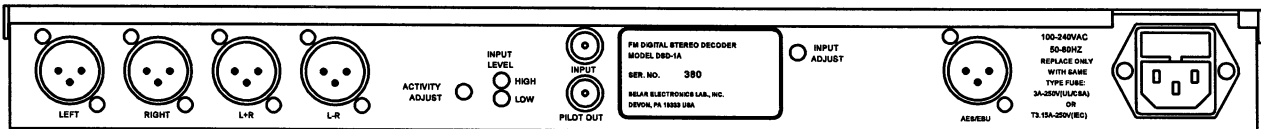
3 Operation

3-1 Front Panel



The green **PILOT** LED is illuminated when the unit detects the 19 kHz pilot. At least 6% injection is required to illuminate this light. The yellow **ACTIVITY** LED will light at 110% or other level that you have set (see the next section for adjustment instructions). Generally you will see this light flicker on and off occasionally during normal operation, depending on program peaks. The red **OVERLOAD** LED will illuminate as you get close to the maximum input level -- if this light is on, your input level is too high.

3-2 Rear Panel



Input Composite, 100 k Ω , unbalanced, BNC Connector, 1.0 - 2.0 Vrms (2.8V - 5.7V P-P).

Digital Output Left and Right Digital, AES/EBU, 48 kHz, on XLR connector

Analog Outputs Left, Right, L+R, L-R
balanced, active 50 Ω Differential Output
+10 dBm into 600 Ω , XLR connectors

Pilot Output 2V pk-pk, 499 Ω source, BNC Connector

4 Installation and Setup

The DSD-1A is designed to be mounted in a standard 19-inch rack. The unit can be operated from an 100 to 240 VAC single phase, 50-60 Hz power source, with no user adjustments. The fuse should be a 3A-250V (UL/CSA) or T3.15A-250V (IEC) fuse only. A spare fuse is stored in the removable fuse compartment.

Connect the three wire grounded line cord provided, or, if a substitute line cord is used, be sure that the ground lead is connected to "G" on the line cord receptacle.

Make the rear panel connection and adjustment as follows:

- COMPOSITE INPUT** *While applying the appropriate calibration signal to the composite input (for example, a Belar FMM-2 or FMMA-1 with the calibrator turned on), adjust the potentiometer labeled "INPUT ADJUST" located on the back panel until both the HIGH and LOW LED's on the back panel are not lit.*
- ACTIVITY ADJUST** The potentiometer labeled "ACTIVITY ADJUST" is used to change the level at which the "ACTIVITY" LED illuminates. The light is set at the factory at 110%, but may be changed according to user preference. The "ACTIVITY" LED is provided as a front-panel indicator of program peaks -- similar to the adjustable peak light of a mod monitor. This LED should be set so that it lights occasionally, so you are assured that there is program material passing through the unit.

During normal operation both the HIGH and LOW LEDs on the rear panel may light at seemingly random and frequent intervals. This is normal and just indicates that there is program material being applied to the unit.

The PILOT LED on the front panel will be illuminated whenever the unit detects the 19 kHz pilot (with at least 6% injection). The OVERLOAD LED warns of possible overload, and should never light. If this LED occasionally lights, turn the input level down.

Audio outputs are 600 ohms, balanced, +10 dBm, XLR-type connectors. Pin 1 is ground, pin 2 is +, pin 3 is -. These outputs have internally selectable de-emphasis, and have been set for 75 μ sec de-emphasis unless 50 μ sec was specified at time of order. The de-emphasis can be changed as described below.



4-1 De-emphasis

The audio de-emphasis of the balanced analog audio outputs can be set for 75 μ sec, 50 μ sec, or flat (no de-emphasis). The factory setting is either 75 μ sec or 50 μ sec, depending on the end destination country specified at time of order. There is a separate jumper for each of the four analog outputs, all located on the A1 board. With the front of the unit toward you, the left jumper position is 75 μ sec, the right jumper position is 50 μ sec, and the center position is flat (no de-emphasis). See the drawing labeled "DSD-1A A1 Board Connections & Adjustments" in Section 5 for more information.

The AES/EBU Digital output is flat (no de-emphasis).

DSD-1A Digital FM Stereo Decoder

5 Diagrams, Schematics and Parts Lists

Replaceable Parts. This page contains information for ordering replaceable parts for the unit. The tables that follow list the parts in alphanumeric order by reference designation and provides a description of the part with the Belar part number.

Ordering Information. To order a replacement part from Belar, address the order or inquiry to Belar and supply the following information:

- a. Model number and serial number of unit.
- b. Description of part, *including the reference designation and location.*

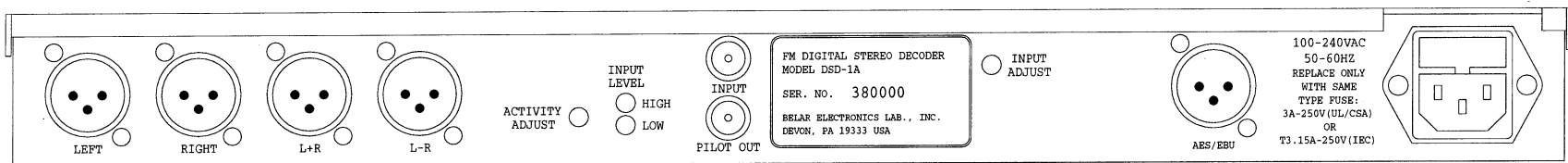
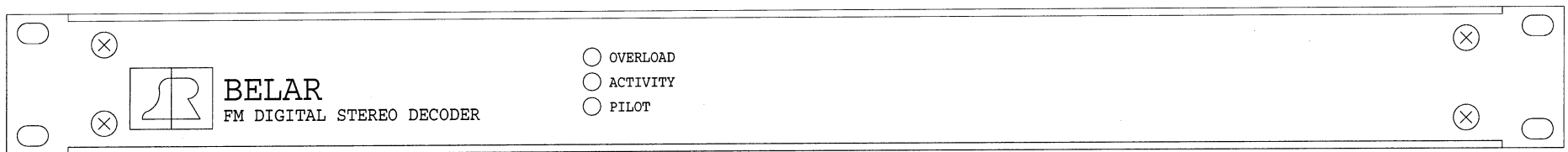
Orders may also be taken over the telephone. Please have the above information handy when you call.

REFERENCE DESIGNATORS

A	= assembly	J	= jack	S	= switch
BR	= diode bridge	L	= inductor	T	= transformer
C	= capacitor	M	= meter	TB	= terminal block
CR	= diode or LED	P	= plug	U	= integrated circuit
DS	= display or lamp	Q	= transistor	W	= cable
F	= fuse	R	= resistor	X	= socket
FL	= filter	RL	= relay	Y	= crystal
HDR	= header connector	RN	= resistor network		

ABBREVIATIONS

BCD	= binary coded decimal	PIV	= peak inverse voltage
CER	= ceramic	POLY	= polystyrene
COMP	= composition	PORC	= porcelain
CONN	= connector	POT	= potentiometer
DPM	= digital panel meter	SEMICON	= semiconductor
ELEC	= electrolytic	SI	= silicon
GE	= germanium	TANT	= tantalum
IC	= integrated circuit	uF	= microfarads
k	= kilo = 1,000	V	= volt
M	= meg = 1,000,000	VAR	= variable
MOD	= modulation	VDCW	= dc working volts
MY	= mylar	W	= watts
PC	= printed circuit	WW	= wirewound
pF	= picofarads		

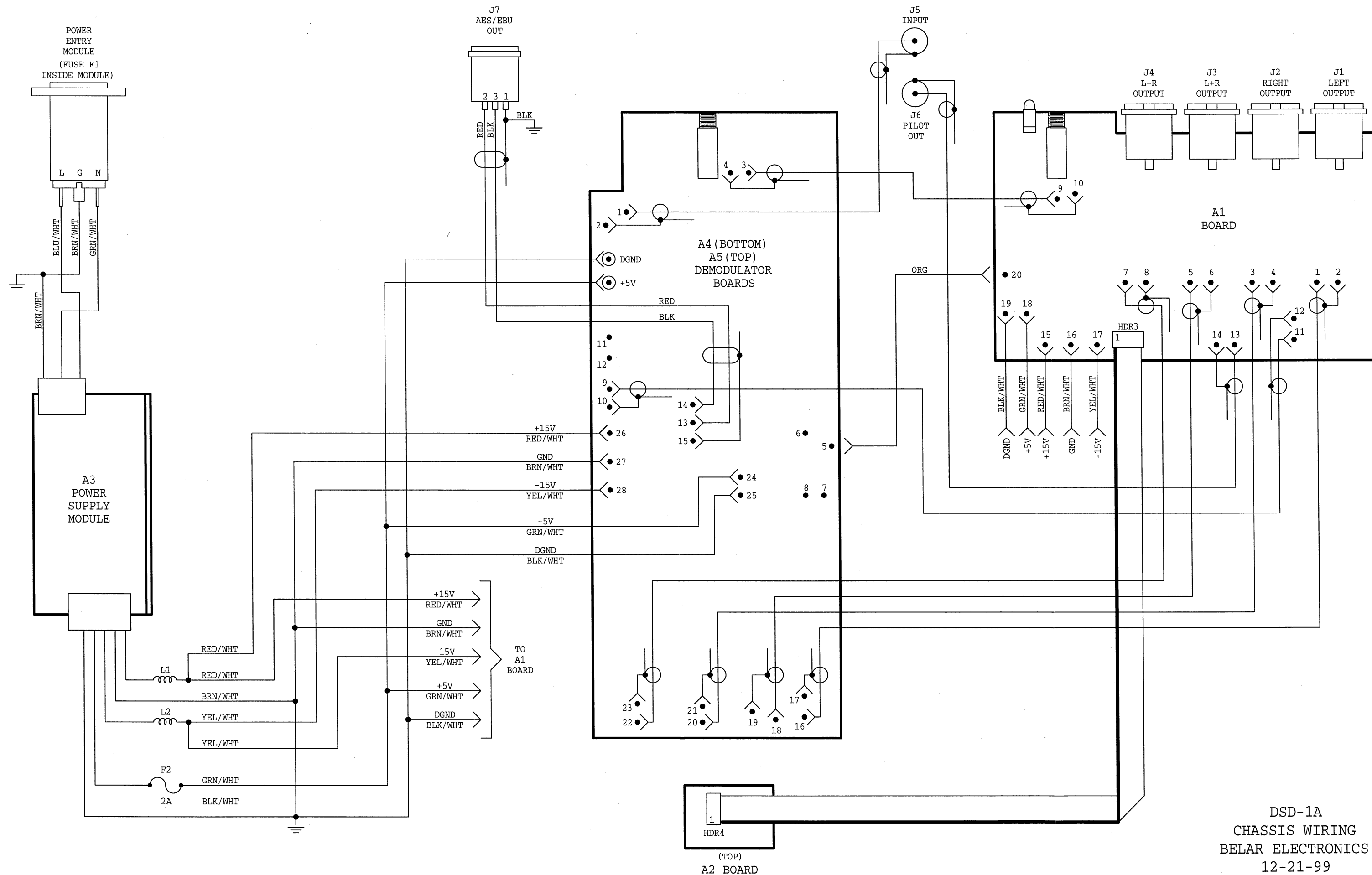


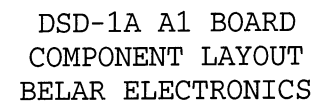
DSD-1A FRONT & REAR VIEW
BELAR ELECTRONICS

DSD-1A PARTS LISTS

MAIN CHASSIS

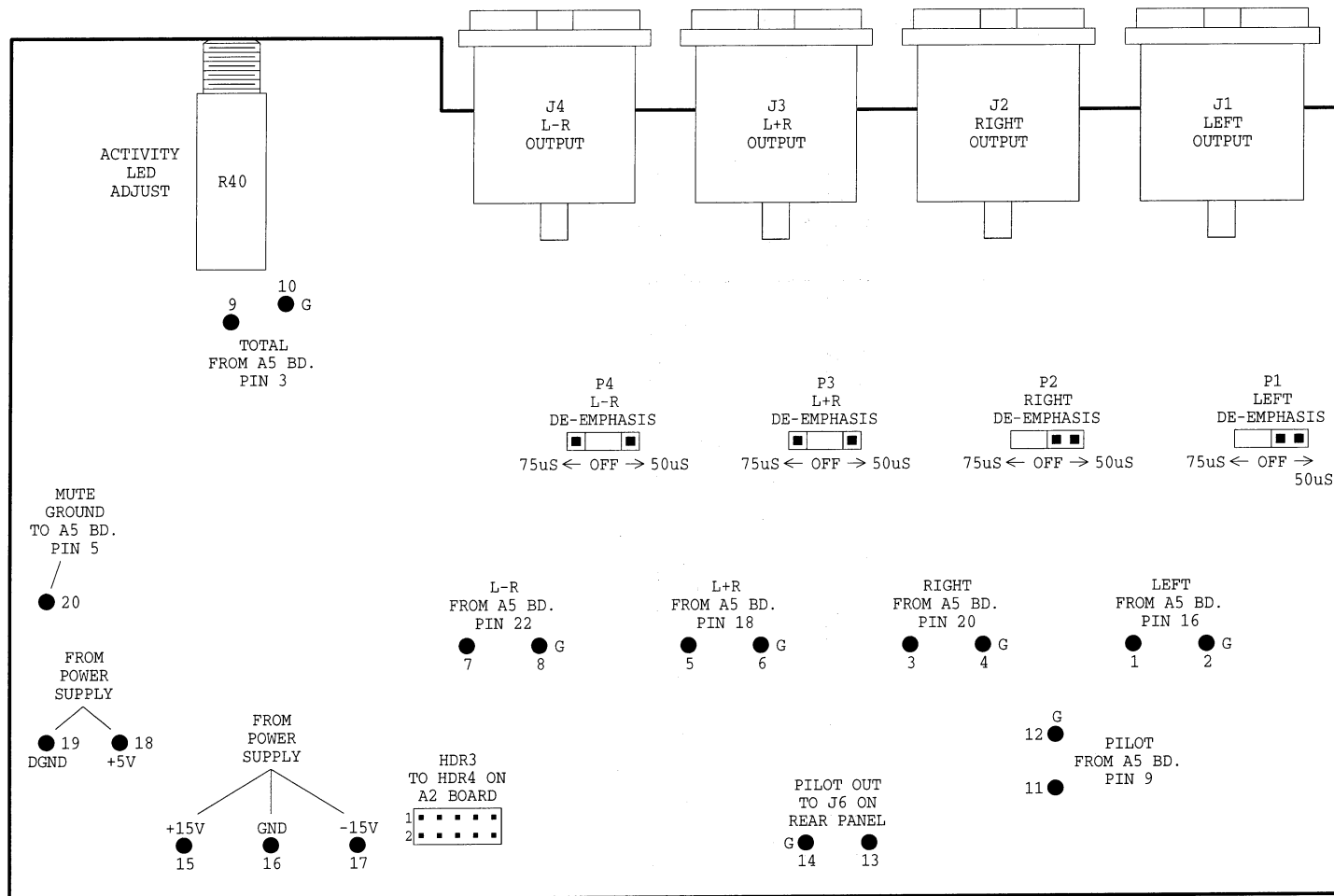
Reference Designation	Description	Part Number
A3	POWER SUPPLY MODULE: 30W	4005-0020A
--	POWER ENTRY MODULE: 6EGG1-1	0360-0021
F1	FUSE: GMA-3A 250V(UL/CSA)	2110-0009
--	or T3.15A-250V(IEC)	
--	FUSE HOLDER: CHASSIS MOUNT	2110-0010
F2	FUSE: AGC-2A 250V	2110-0006
J5, J6	JACK: BNC	0360-0005
J7	JACK: XLR MALE	0360-0047
L1, L2	CHOKE: RF	9140-0011
--	FLAT CABLE ASSEMBLY: 10 CONDUCTOR	8900-0008
--	LINE CORD (115 Vac line voltage)	8120-0002
--	LINE CORD (230 Vac line voltage)	8120-0004





DSD-1A A1 BOARD
PART LOCATIONS

<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>
C1 G3	C29 A2	P1 G2	R20 C3	R48 C3	U16 B1	
C2 G2	C30 A4	P2 F2	R21 C3	R49 C3	U17 B3	
C3 G2	C31 B4	P3 E2	R22 D3	R50 F4	U18 E4	
C4 G2	C32 B4	P4 D2	R23 C2	R51 F4	U19 D4	
C5 G2	C33 B4		R24 C2	R52 E4	U20 A2	
C6 F3	C34 A4	Q1 B4	R25 B2	R53 E4		
C7 F2	C35 A3	Q2 B4	R26 B2	R54 E4		<u>pins</u>
C8 F2		Q2 D4	R27 B2	R55 D4	1 F3	
C9 E2	CR1 B2		R28 A2	R56 D4	2 G3	
C10 E2	CR2 B2	R1 G3	R29 A2	R57 D4	3 E3	
C11 E3	CR3 B2	R2 G3	R30 A2	R58 D4	4 F4	
C12 E2	CR4 B2	R3 G3	R31 A2	R59 E4	5 D3	
C13 E2	CR5 A3	R4 G3	R32 A2		6 D3	
C14 D2	CR6 A2	R5 G2	R33 A1	U1 G3	7 C3	
C15 D2	CR7 A1	R6 G2	R34 A1	U2 G3	8 C3	
C16 D3	CR8 E4	R7 E3	R35 A1	U3 G2	9 B2	
C17 D2	CR9 B4	R8 E3	R36 A1	U4 E3	10 B2	
C18 D2	CR10 B4	R9 E3	R37 A1	U5 F3	11 F4	
C19 C2	CR11 A4	R10 F3	R38 C1	U6 E2	12 F4	
C20 C2		R11 E2	R39 B1	U7 D3	13 E4	
C21 A2	HDR3 C4	R12 E2	R40 B1	U8 E3	14 E4	
C22 A1		R13 D3	R41 B2	U9 D2	15 A4	
C23 B3	J1 G1	R14 D3	R42 C1	U10 C3	16 B4	
C24 B3	J2 F1	R15 D3	R43 B1	U11 D3	17 B4	
C25 B3	J3 E1	R16 E3	R44 B3	U12 C2	18 A4	
C26 F4	J4 C1	R17 D2	R45 B3	U13 B2	19 A4	
C27 E4		R18 D2	R46 B1	U14 A2	20 A3	
C28 A2		R19 C3	R47 B1	U15 A1		



DSD-1A A1 BOARD
CONNECTIONS & ADJUSTMENTS
BELAR ELECTRONICS

A1 BOARD DSD-1A

Reference Designation	Description	Part Number
C1	C: FIXED CERAMIC 1.0uF 50V	0151-0016
C2	C: FIXED POLY 2000pF 2.5% 160V	0130-2022
C3	C: FIXED POLY 3000pF 2.5% 160V	0130-3022
C4, C5	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C6	C: FIXED CERAMIC 1.0uF 50V	0151-0016
C7	C: FIXED POLY 2000pF 2.5% 160V	0130-2022
C8	C: FIXED POLY 3000pF 2.5% 160V	0130-3022
C9, C10	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C11	C: FIXED CERAMIC 1.0uF 50V	0151-0016
C12	C: FIXED POLY 2000pF 2.5% 160V	0130-2022
C13	C: FIXED POLY 3000pF 2.5% 160V	0130-3022
C14, C15	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C16	C: FIXED CERAMIC 1.0uF 50V	0151-0016
C17	C: FIXED POLY 2000pF 2.5% 160V	0130-2022
C18	C: FIXED POLY 3000pF 2.5% 160V	0130-3022
C19, 20	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C21	C: FIXED FILM 0.22uF 10% 80V	0120-2241
C22	C: FIXED MICA 100pF 5%	0140-1015
C23	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C24, C25	C: FIXED FILM 0.01uF 10% 200V	0120-1031
C26	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C27	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C28 thru C30	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C31	C: FIXED TANT 6.8uF 25V	0185-0002
C32	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C33	C: FIXED TANT 6.8uF 25V	0185-0002
C34	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C35	C: FIXED TANT 6.8uF 25V	0185-0002
CR1 thru CR4	DIODE: 1N4446	1900-0002
CR5	DIODE: 1N277 GERMANIUM	1900-0001
CR6	DIODE: 1N4446	1900-0002
CR7	LED: BI-LEVEL, RED/RED	1910-0009
CR8	DIODE: 1N277 GERMANIUM	1900-0001
CR9 thru CR11	DIODE: 1N4006	1900-0016
HDR3	HEADER CONNECTOR: 10 PIN	0361-0010
J1 thru J4	CONNECTOR: "XLR" MALE	0360-0046
P1 thru P4	PLUG: 4 PIN, PC MOUNT	0365-0045
--	JUMPER: 2 POSITION (USED WITH P1 thru P4)	0365-0028
Q1 thru Q3	TRANSISTOR: 2N4401	1850-0028
R1	R: METAL FILM 1.37k 1%	0721-1371
R2	R: METAL FILM 49.9k 1%	0721-4992
R3	R: METAL FILM 100k 2% 1/4W	0751-1042
R4	R: METAL FILM 10.0k 1%	0721-1002

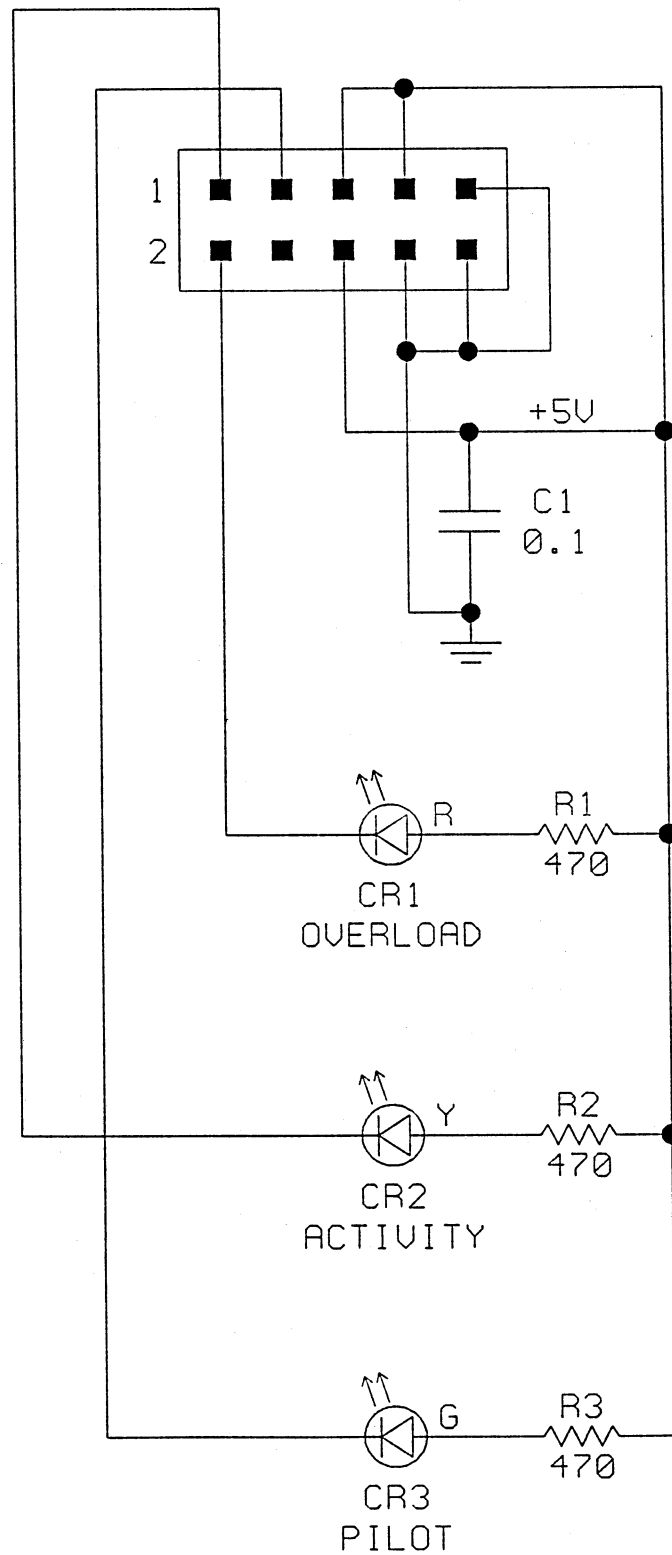
A1 BOARD DSD-1A cont.

Reference Designation	Description	Part Number
R5,R6	R: METAL FILM 24.9k 1%	0721-2492
R7	R: METAL FILM 1.00k 1%	0721-1001
R8	R: METAL FILM 49.9k 1%	0721-4992
R9	R: METAL FILM 100k 2% 1/4W	0751-1042
R10	R: METAL FILM 10.0k 1%	0721-1002
R11,R12	R: METAL FILM 24.9k 1%	0721-2492
R13	R: METAL FILM 1.00k 1%	0721-1001
R14	R: METAL FILM 49.9k 1%	0721-4992
R15	R: METAL FILM 100k 2% 1/4W	0751-1042
R16	R: METAL FILM 10.0k 1%	0721-1002
R17,R18	R: METAL FILM 24.9k 1%	0721-2492
R19	R: METAL FILM 1.00k 1%	0721-1001
R20	R: METAL FILM 49.9k 1%	0721-4992
R21	R: METAL FILM 100k 2% 1/4W	0751-1042
R22	R: METAL FILM 10.0k 1%	0721-1002
R23,R24	R: METAL FILM 24.9k 1%	0721-2492
R25,R26	R: METAL FILM 10.0k 0.1%	0711-1002
R27	R: METAL FILM 10k 2% 1/4W	0751-1032
R28	R: METAL FILM 5.1k 2% 1/4W	0751-5122
R29	R: FIXED CARBON 5.6M 5% 1/4W	0683-5655
R30	R: METAL FILM 1.00k 1%	0721-1001
R31*	R: METAL FILM 2.49k 1%	0721-2491
R32*	R: METAL FILM 75.0 1%	0721-75R0
R33*	R: METAL FILM 2.21k 1%	0721-2211
*(Prior to serial number 380029: R31 was 2.32k, R32 was 90.9 ohm and R33 was 2.74k)		
R34	R: FIXED CARBON 1.5M 5% 1/4W	0683-1555
R35	R: METAL FILM 510 2% 1/4W	0751-5112
R36	R: FIXED CARBON 2.2M 5% 1/4W	0683-2255
R37	R: METAL FILM 510 2% 1/4W	0751-5112
R38*	R: METAL FILM 4.22k 1%	0721-4221
R39*	R: METAL FILM 348 1%	0721-3480
R40	R: VAR COMP 2k, 10 TURN	2100-0031
R41*	R: METAL FILM 4.64k 1%	0721-4641
*(Prior to serial number 380029: R38 was 3.01k, R39 was 432 ohm and R41 was 5.11k)		
R42	R: FIXED CARBON 1.5M 5% 1/4W	0683-1555
R43	R: METAL FILM 22k 2% 1/4W	0751-2232
R44	R: FIXED CARBON 5.6M 5% 1/4W	0683-5655
R45	R: METAL FILM 10k 2% 1/4W	0751-1032
R46	R: FIXED CARBON 1.5M 5% 1/4W	0683-1555
R47	R: METAL FILM 22k 2% 1/4W	0751-2232
R48	R: FIXED CARBON 5.6M 5% 1/4W	0683-5655
R49	R: METAL FILM 10k 2% 1/4W	0751-1032
R50	R: METAL FILM 220k 2% 1/4W	0751-2242
R51	R: METAL FILM 5.36k 1%	0721-5361
R52	R: METAL FILM 38.3k 1%	0721-3832
R53	R: METAL FILM 499 1%	0721-4990
R54	R: METAL FILM 820k 2% 1/4W	0751-8242
R55	R: METAL FILM 22k 2% 1/4W	0751-2232

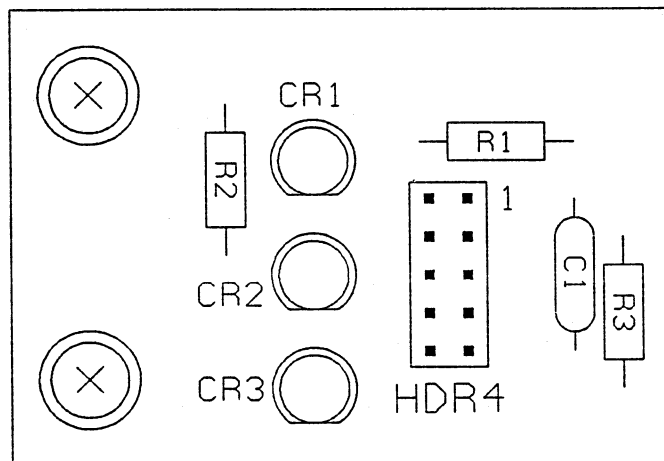
A1 BOARD DSD-1A cont.

Reference Designation	Description	Part Number
R56	R: METAL FILM 820k 2% 1/4W	0751-8242
R57	R: METAL FILM 10k 2% 1/4W	0751-1032
R58	R: METAL FILM 20.0k 1%	0721-2002
R59	R: METAL FILM 4.99k 1%	0721-4991
U1	IC: NE5532	1826-0037
U2	IC: TLO71	1826-0004
U3	IC: SSM2142P	1827-0005
U4	IC: NE5532	1826-0037
U5	IC: TLO71	1826-0004
U6	IC: SSM2142P	1827-0005
U7	IC: NE5532	1826-0037
U8	IC: TLO71	1826-0004
U9	IC: SSM2142P	1827-0005
U10	IC: NE5532	1826-0037
U11	IC: TLO71	1826-0004
U12	IC: SSM2142P	1827-0005
U13,U14	IC: TLE2082	1826-0069
U15,U16	IC: LM393	1826-0011
U17	IC: 4538B	1822-0023
U18	IC: TLO71	1826-0004
U19	IC: LM393	1826-0011
U20	IC: AD680	1826-0051

HDR4
FROM HDR3
ON A1 BOARD



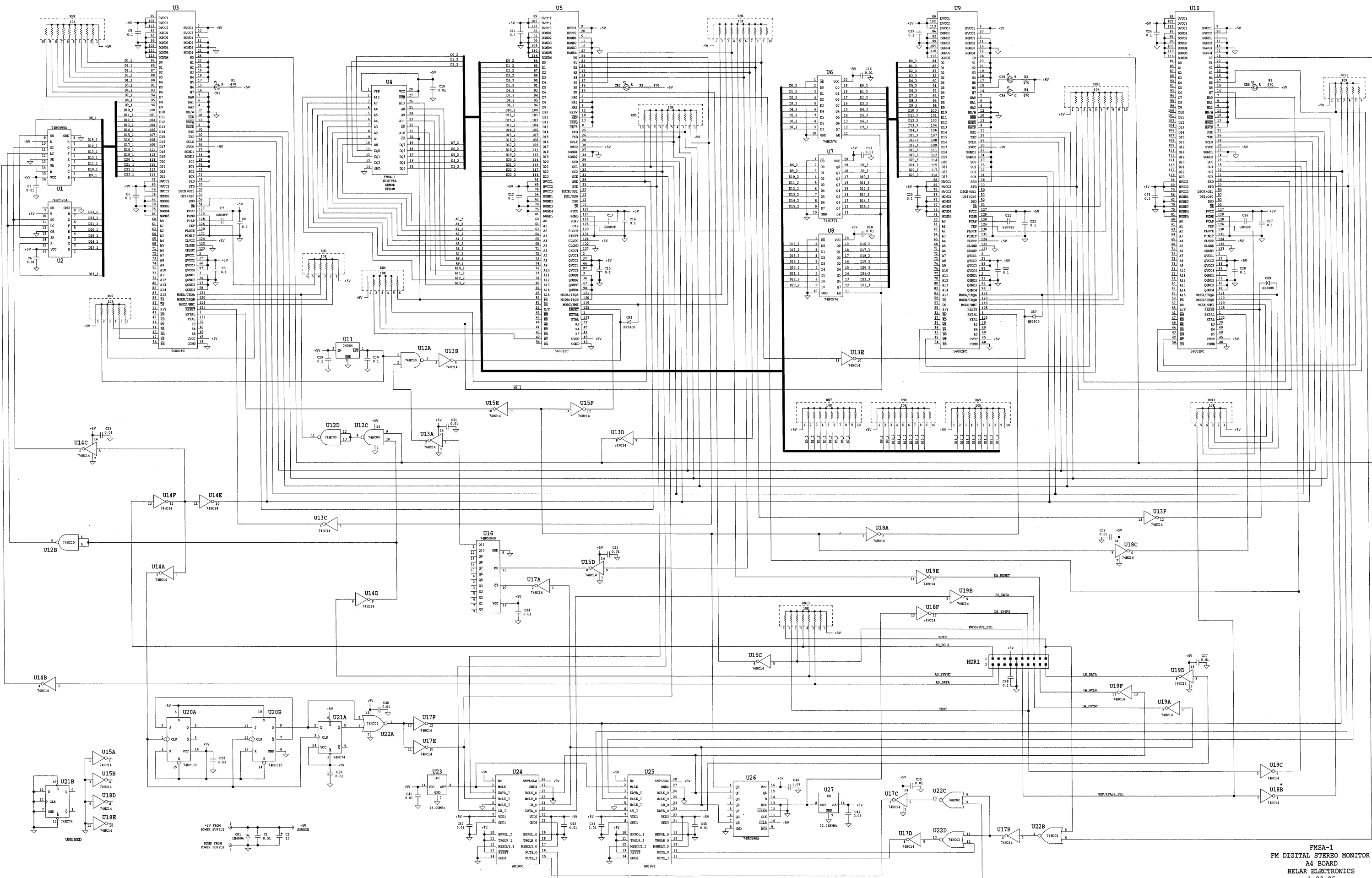
DSD-1/DSD-1A A2 BOARD
BELAR ELECTRONICS
7-5-95



DSD-1/DSD-1A A2 BOARD
 COMPONENT LAYOUT
 BELAR ELECTRONICS

A2 BOARD DSD-1/DSD-1A

Reference Designation	Description	Part Number
C1	C: FIXED CERAMIC 0.1uF 50V	0151-0006
CR1	LED: RED MV5053	1910-0001
CR2	LED: YELLOW MV5353	1910-0002
CR3	LED: GREEN CMD5453	1910-0003
HDR4	HEADER CONNECTOR: 10 PIN	0361-0010
R1 thru R3	R: METAL FILM 470 2% 1/4W	0751-4712



FMSA-1 A4 BOARD
PART LOCATIONS

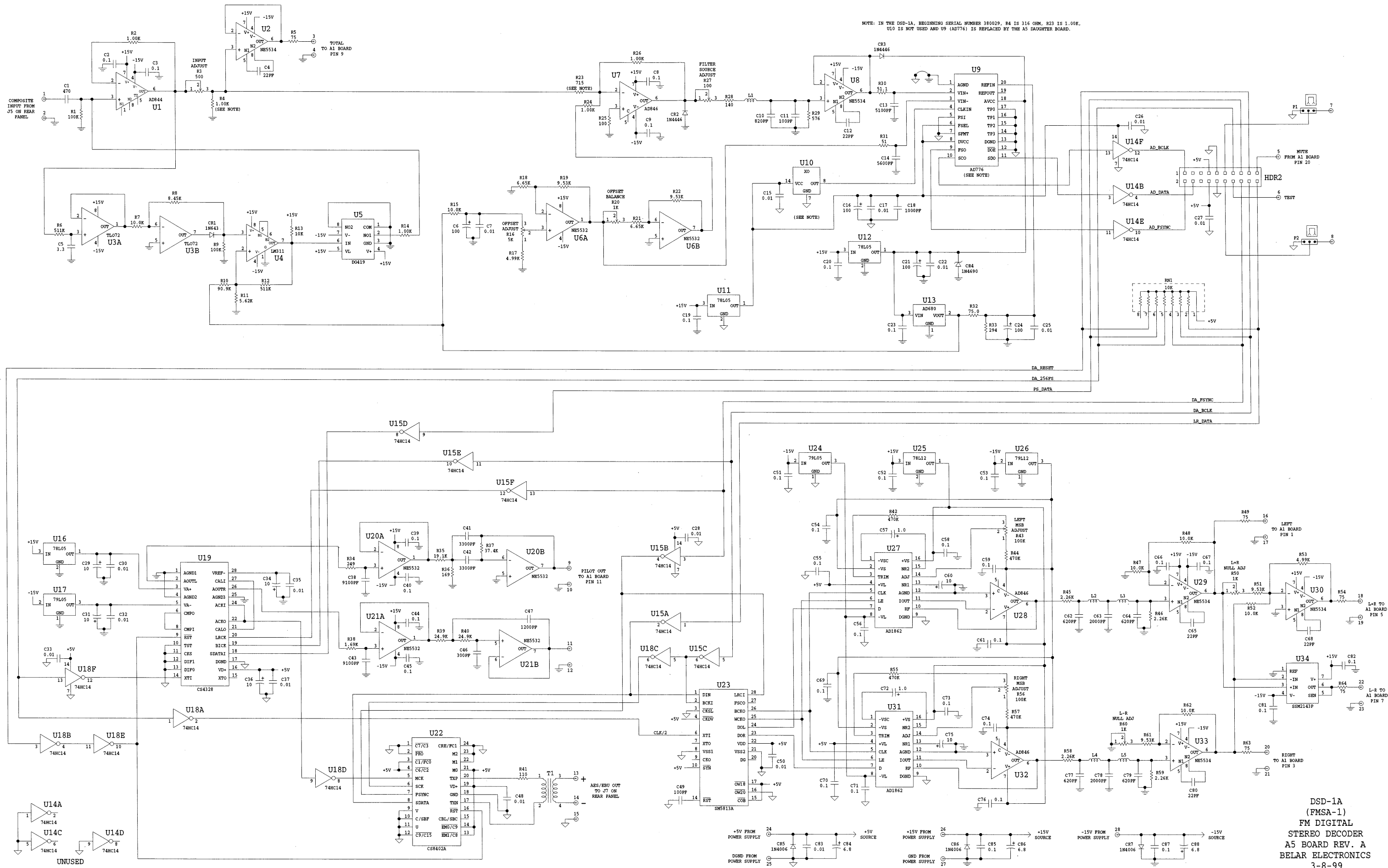
<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>
C1 A3	C21 A7	C41 D8	R1 A2	U1 B1	U21 D6
C2 A3	C22 A7	C42 D7	R2 A3	U2 B2	U22 D6
C3 B2	C23 B8	C43 D6	R3 A7	U3 B2	U23 D8
C4 A2	C24 B9	C44 D8	R4 A7	U4 A4	U24 D7
C5 B2	C25 B9	C45 D7	R5 A9	U5 B5	U25 D7
C6 C2	C26 C9	C46 D7		U6 C6	U26 D7
C7 B2	C27 C9	C47 D8	RN1 C2	U7 B6	U27 D8
C8 B2	C28 B8	C48 D5	RN2 C3	U8 A6	
C9 B3	C29 C3		RN3 A2	U9 B7	<u>pins</u>
C10 A5	C30 C3	CR1 A3	RN4 B4	U10 B9	1 A3
C11 B5	C31 C4	CR2 A2	RN5 B4	U11 C3	2 A3
C12 B5	C32 D5	CR3 A3	RN6 C4	U12 C3	
C13 C5	C33 D4	CR4 C5	RN7 A6	U13 C4	
C14 C5	C34 D4	CR5 A7	RN8 B6	U14 D5	
C15 B4	C35 D6	CR6 A7	RN9 C6	U15 D4	
C16 C7	C36 D8	CR7 A7	RN10 A8	U16 D4	
C17 B7	C37 D5	CR8 A9	RN11 C8	U17 D6	
C18 B7	C38 D6	CR9 C9	RN12 C9	U18 D9	
C19 B7	C39 D5		RN13 D4	U19 D5	
C20 C7	C40 D6	HDR1 D5		U20 D6	

A4 BOARD DSD-1A (FMSA-1)

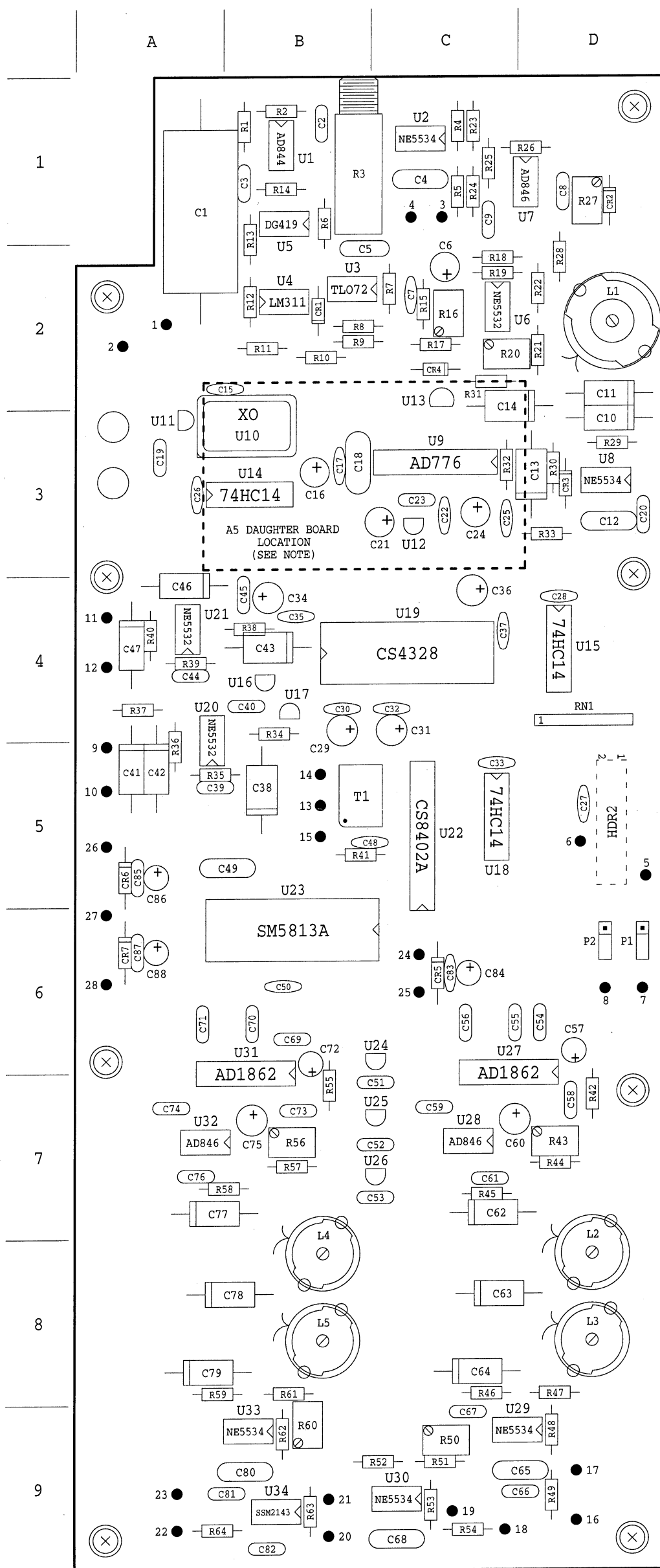
Reference Designation	Description	Part Number
C1	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C2	C: FIXED TANTALUM 10uF 16V	0185-0007
C3, C4	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C5, C6	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C7	C: FIXED CERAMIC CHIP 6800pF 50V C1210	0151-0022
C8, C9	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C10	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C11, C12	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C13	C: FIXED CERAMIC CHIP 6800pF 50V C1210	0151-0022
C14, C15	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C16 thru C18	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C19, C20	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C21	C: FIXED CERAMIC CHIP 6800pF 50V C1210	0151-0022
C22 thru C25	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C26	C: FIXED CERAMIC CHIP 6800pF 50V C1210	0151-0022
C27 thru C30	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C31 thru C47	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C48	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
CR1	DIODE: 1N4006	1900-0016
CR2, CR3	LED: RED T-1	1910-0004
CR4	DIODE: HP5082-2800	1900-0026
CR5	LED: RED T-1	1910-0004
CR6	LED: GREEN T-1	1910-0008
CR7	DIODE: HP5082-2800	1900-0026
CR8	LED: RED T-1	1910-0004
CR9	DIODE: HP5082-2800	1900-0026
HDR1	HEADER CONNECTOR: 20 PIN	0361-0020
R1 thru R5	R: FIXED CARBON CHIP 470 5% RC1206	0681-4715
RN1	R: NETWORK 10 PIN 10k	0910-1032
RN2 thru RN4	R: NETWORK 6 PIN 10k	0906-1032
RN5 thru RN10	R: NETWORK 10 PIN 10k	0910-1032
RN11, RN12	R: NETWORK 6 PIN 10k	0906-1032
RN13	R: NETWORK 8 PIN 10k	0908-1032
U1, U2	IC: 74HC595D	1872-0012
U3	IC: 56002FC	1890-0002
U4*	IC: FMSA-1 DIGITAL DEMOD EPROM	1840-0003H
	*(used in the DSD-1A beginning serial number 380029)	
U4**	IC: FMSA-1 DIGITAL DEMOD EPROM	1840-0003B
	** (used in the DSD-1A prior to serial number 380029)	
U5	IC: 56002FC	1890-0002
U6 thru U8	IC: 74HC574D	1872-0011
U9, U10	IC: 56002FC	1890-0002
U11	IC: MC34064	1826-0048
U12	IC: 74HC00D	1872-0001

A4 BOARD DSD-1A (FMSA-1) cont.

Reference Designation	Description	Part Number
U13 thru U15	IC: 74HC14AD	1872-0010
U16	IC: 74HC4040D	1872-0013
U17 thru U19	IC: 74HC14AD	1872-0010
U20	IC: 74HC112D	1872-0004
U21	IC: 74HC74AD	1872-0003
U22	IC: 74HC02D	1872-0002
U23	IC: XO, 16.000MHz	0415-1600
U24, U25	IC: AD1891	1880-0001
U26	IC: 74HC590D	1872-0005
U27	IC: XO, 12.288MHz	0415-1228



DSD-1A
(FMSA-1)
FM DIGITAL
STEREO DECODER
A5 BOARD REV. A
BELAR ELECTRONICS
3-8-99

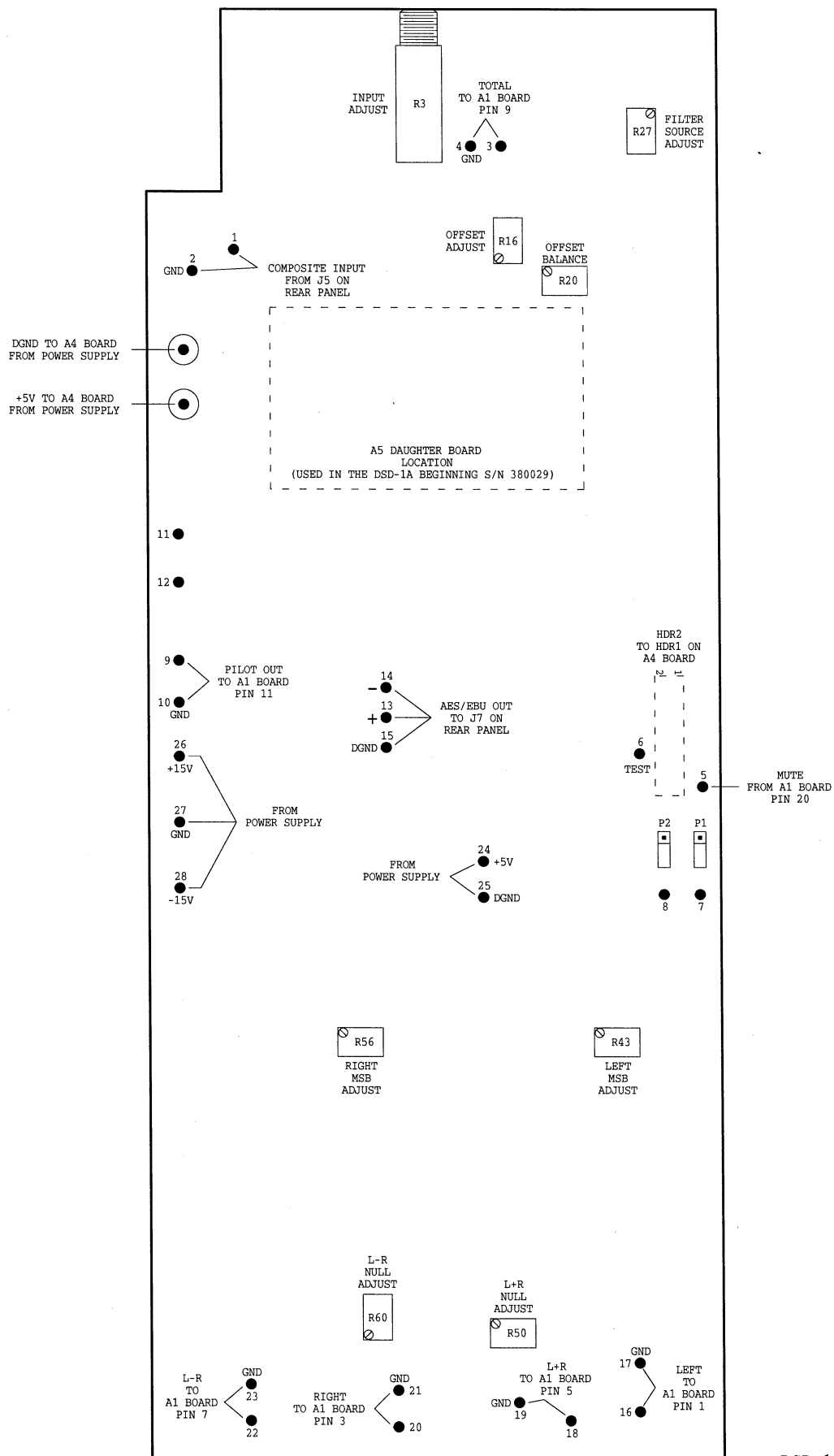


NOTE: IN THE DSD-1A BEGINNING SERIAL NUMBER 380029, U10 IS NOT USED AND U9 (AD776) IS REPLACED BY THE A5 DAUGHTER BOARD.

DSD-1A A5 BOARD
(FMSA-1)
REV. A
COMPONENT LAYOUT
BELAR ELECTRONICS

FMSA-1 A5 BOARD REV. A
PART LOCATIONS

<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>	<u>Desig/Loc</u>
C1 A1	C42 A5	C83 C6	R16 C2	R57 B7	U29 D9
C2 B1	C43 B4	C84 C6	R17 C2	R58 B7	U30 C9
C3 B1	C44 A4	C85 A5	R18 C2	R59 A8	U31 B6
C4 C1	C45 B4	C86 A5	R19 C2	R60 B9	U32 A7
C5 B2	C46 A4	C87 A6	R20 C2	R61 B8	U33 B9
C6 C2	C47 A4	C88 A6	R21 D2	R62 B9	U34 B9
C7 C2	C48 B5		R22 D2	R63 B9	
C8 D1	C49 B5	CR1 B2	R23 C1	R64 A9	<u>pins</u>
C9 C1	C50 B6	CR2 D1	R24 C1		1 A2
C10 D3	C51 C7	CR3 D3	R25 C1	RN1 D4	2 A2
C11 D2	C52 C7	CR4 C2	R26 D1		3 C1
C12 D3	C53 C7	CR5 C6	R27 D1	T1 B5	4 C1
C13 D3	C54 D6	CR6 A5	R28 D2		5 D5
C14 C2	C55 C6	CR7 A6	R29 D3	U1 B1	6 D5
C15 B2	C56 C6		R30 D3	U2 C1	7 D6
C16 B3	C57 D6	HDR2 D5	R31 C2	U3 B2	8 D6
C17 B3	C58 D7		R32 C3	U4 B2	9 A5
C18 B3	C59 C7	L1 D2	R33 D3	U5 B1	10 A5
C19 A3	C60 C7	L2 D8	R34 B4	U6 C2	11 A4
C20 D3	C61 C7	L3 D8	R35 A5	U7 D1	12 A4
C21 C3	C62 C7	L4 B8	R36 A5	U8 D3	13 B5
C22 C3	C63 C8	L5 B8	R37 A4	U9 C3	14 B5
C23 C3	C64 C8		R38 B4	U10 B3	15 B5
C24 C3	C65 D9	P1 D6	R39 A4	U11 A3	16 D9
C25 C3	C66 D9	P2 D6	R40 A4	U12 C3	17 D9
C26 A3	C67 C9		R41 B5	U13 C2	18 C9
C27 D5	C68 C9	R1 B1	R42 D7	U14 B3	19 C9
C28 D4	C69 B6	R2 B1	R43 D7	U15 D4	20 B9
C29 B4	C70 B6	R3 B1	R44 D7	U16 B4	21 B9
C30 B4	C71 A6	R4 C1	R45 C7	U17 B4	22 A9
C31 C4	C72 B6	R5 C1	R46 C8	U18 C5	23 A9
C32 C4	C73 B7	R6 B1	R47 D8	U19 C4	24 C6
C33 C5	C74 A7	R7 C2	R48 D9	U20 A4	25 C6
C34 B4	C75 B7	R8 B2	R49 D9	U21 A4	26 A5
C35 B4	C76 A7	R9 B2	R50 C9	U22 C5	27 A6
C36 C4	C77 A7	R10 B2	R51 C9	U23 B6	28 A6
C37 C4	C78 B8	R11 B2	R52 C9	U24 C6	
C38 B5	C79 A8	R12 B2	R53 C9	U25 C7	
C39 A5	C80 B9	R13 B1	R54 C9	U26 C7	
C40 B4	C81 B9	R14 B1	R55 B7	U27 C6	
C41 A5	C82 B9	R15 C2	R56 B7	U28 C7	



DSD-1A A5 BOARD
(FMSA-1)
REV. A
CONNECTIONS & ADJUSTMENTS
BELAR ELECTRONICS

A5 BOARD DSD-1A rev. A (FMSA-1)

Reference Designation	Description	Part Number
C1	C: FIXED ELEC 470uF 25V NON-POLAR	0180-0037
C2, C3	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C4	C: FIXED MICA 22pF 5%	0140-2205
C5	C: FIXED CERAMIC 3.3uF 50V	0151-0011
C6	C: FIXED TANT 100uF 6.3V	0185-0010
C7	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C8, C9	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C10	C: FIXED POLY 820pF 2.5% 160V	0130-8212
C11	C: FIXED POLY 100pF 2.5% 160V	0130-1012
C12	C: FIXED MICA 22pF 5%	0140-2205
C13	C: FIXED POLY 5100pF 1% 160V (selected)	0130-5122
C14	C: FIXED POLY 5600pF 2.5% 160V	0130-5622
C15	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C16	C: FIXED TANT 100uF 6.3V	0185-0010
C17	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C18	C: FIXED MICA 1000pF 5%	0140-1025
C19, C20	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C21	C: FIXED TANT 100uF 6.3V	0185-0010
C22	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C23	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C24	C: FIXED TANT 100uF 6.3V	0185-0010
C25 thru C28	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C29	C: FIXED TANT 10uF 16V	0185-0007
C30	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C31	C: FIXED TANT 10uF 16V	0185-0007
C32, C33	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C34	C: FIXED TANT 10uF 16V	0185-0007
C35	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C36	C: FIXED TANT 10uF 16V	0185-0007
C37	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C38	C: FIXED POLY 9100pF 2.5% 160V	0130-9122
C39, C40	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C41, C42	C: FIXED POLY 3300pF 2.5% 160V	0130-3322
C43	C: FIXED POLY 9100pF 2.5% 160V	0130-9122
C44, C45	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C46	C: FIXED POLY 300pF 2.5% 160V	0130-3012
C47	C: FIXED POLY 1200pF 2.5% 160V	0130-1222
C48	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C49	C: FIXED MICA 100pF 5%	0140-1015
C50	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C51 thru C56	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C57	C: FIXED TANT 1uF 35V	0185-0006
C58, C59	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C60	C: FIXED TANT 10uF 16V	0185-0007
C61	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C62	C: FIXED POLY 620pF 2.5% 160V (C62 is matched with C77)	0130-6212
C63	C: FIXED POLY 2000pF 2.5% 160V (C63 is matched with C78)	0130-2022

A5 BOARD DSD-1A rev. A (FMSA-1) cont.

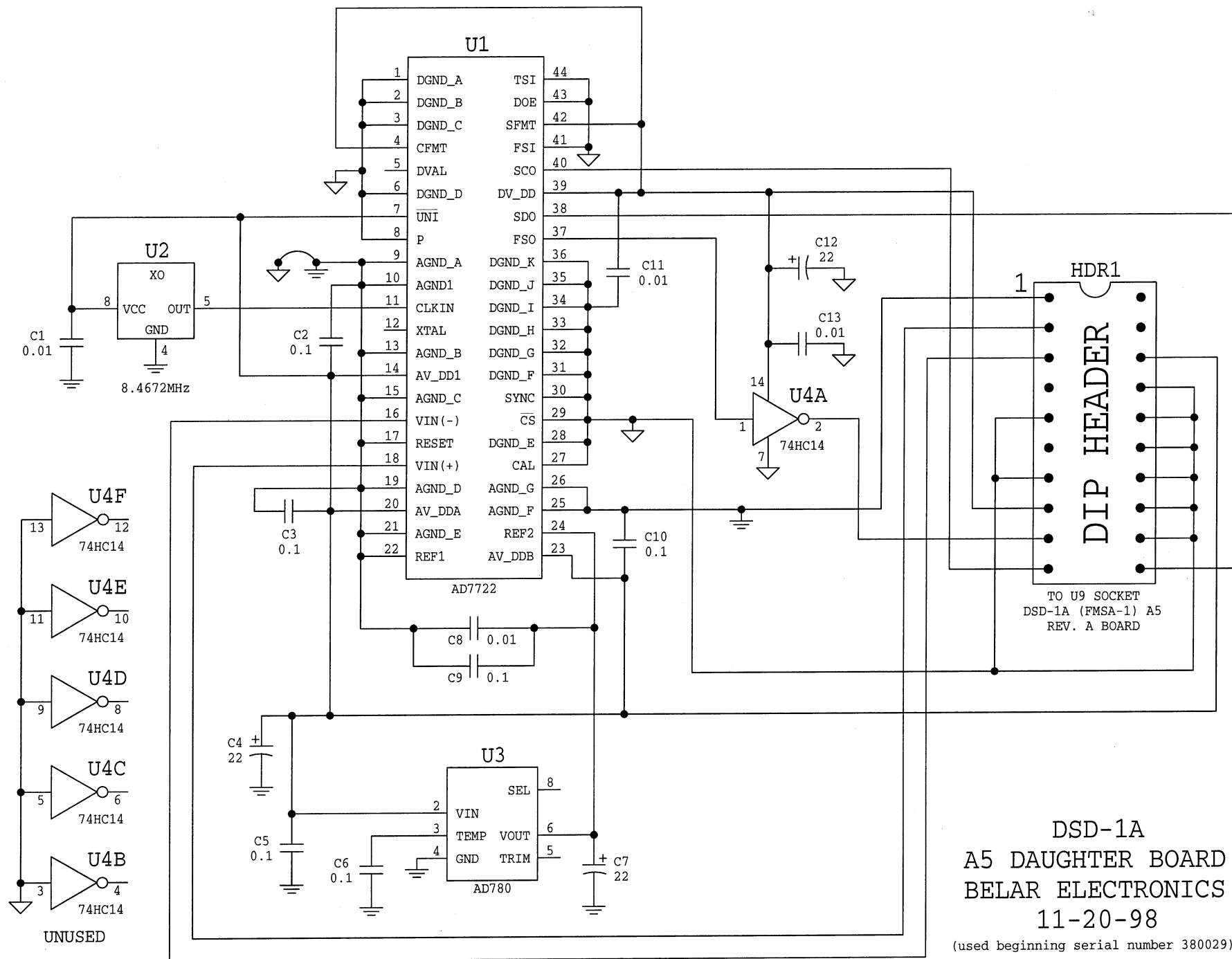
Reference Designation	Description	Part Number
C64	C: FIXED POLY 620pF 2.5% 160V (C64 is matched with C79)	0130-6212
C65	C: FIXED MICA 22pF 5%	0140-2205
C66, C67	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C68	C: FIXED MICA 22pF 5%	0140-2205
C69 thru C71	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C72	C: FIXED TANT 1uF 35V	0185-0006
C73, C74	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C75	C: FIXED TANT 10uF 16V	0185-0007
C76	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C77	C: FIXED POLY 620pF 2.5% 160V (C77 is matched with C62)	0130-6212
C78	C: FIXED POLY 2000pF 2.5% 160V (C78 is matched with C63)	0130-2022
C79	C: FIXED POLY 620pF 2.5% 160V (C79 is matched with C64)	0130-6212
C80	C: FIXED MICA 22pF 5%	0140-2205
C81, C82	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C83	C: FIXED CERAMIC 0.01uF 100V	0151-0003
C84	C: FIXED TANT 6.8uF 25V	0185-0002
C85	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C86	C: FIXED TANT 6.8uF 25V	0185-0002
C87	C: FIXED CERAMIC 0.1uF 50V	0151-0015
C88	C: FIXED TANT 6.8uF 25V	0185-0002
CR1	DIODE: 1N643	1900-0017
CR2, CR3	DIODE: 1N4446	1900-0002
CR4	DIODE: 1N4690	1900-0031
CR5 thru CR7	DIODE: 1N4006	1900-0016
HDR2	HEADER RECEPTACLE: 20 PIN	0361-2020
L1 thru L5	INDUCTOR: BELAR	
P1, P2	PLUG: 3 PIN, PC MOUNT	0365-0030
--	JUMPER: 2 POSITION (USED WITH P1 & P2)	0365-0028
R1	R: METAL FILM 100k 1%	0721-1003
R2	R: METAL FILM 1.00k 1%	0721-1001
R3	R: VAR COMP 500, 10 TURN	2100-0028
R4*	R: METAL FILM 1.00k 1%	0721-1001
*Note: beginning DSD-1A s/n 380029, R4 is 316 1%, P/N 0721-3160		
R5	R: METAL FILM 75 2% 1/4W	0751-7502
R6	R: METAL FILM 511k 1%	0721-5113
R7	R: METAL FILM 10.0k 1%	0721-1002
R8	R: METAL FILM 8.45k 1%	0721-8451
R9	R: METAL FILM 100k 1%	0721-1003
R10	R: METAL FILM 90.9k 1%	0721-9092
R11	R: METAL FILM 5.62k 1%	0721-5621

A5 BOARD DSD-1A rev. A (FMSA-1) cont.

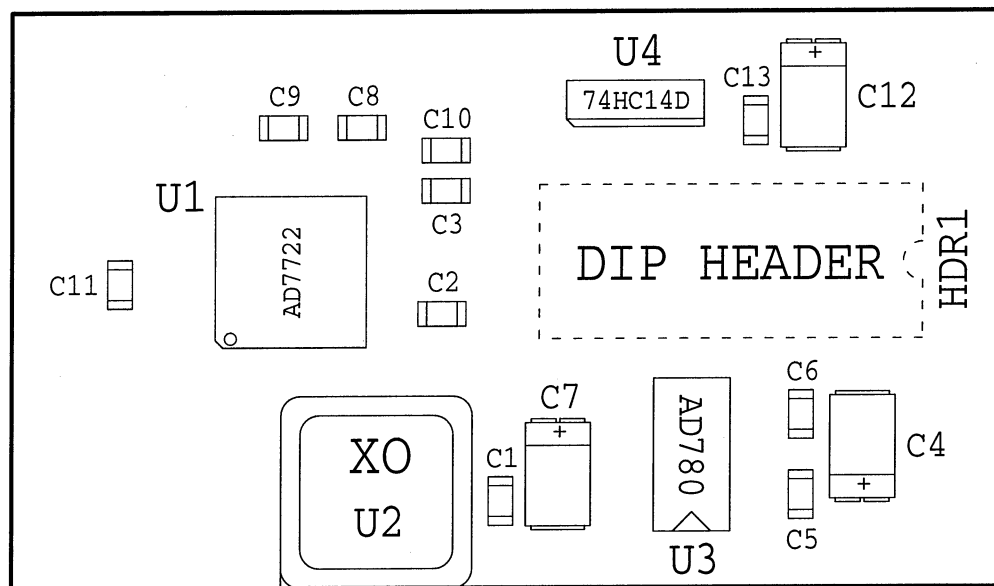
Reference Designation	Description	Part Number
R12	R: METAL FILM 511k 1%	0721-5113
R13	R: METAL FILM 10k 2% 1/4W	0751-1032
R14	R: METAL FILM 1.00k 1%	0721-1001
R15	R: METAL FILM 10.0k 1%	0721-1002
R16	R: VAR COMP 5k, 10 TURN	2100-0020
R17	R: METAL FILM 4.99k 1%	0721-4991
R18	R: METAL FILM 6.65k 1%	0721-6651
R19	R: METAL FILM 9.53k 1%	0721-9531
R20	R: VAR COMP 1k, 10 TURN	2100-0021
R21	R: METAL FILM 6.65k 1%	0721-6651
R22	R: METAL FILM 9.53k 1%	0721-9531
R23*	R: METAL FILM 715 1%	0721-7150
*Note: beginning DSD-1A s/n 380029, R23 is 1.00k 1%, P/N 0721-1001		
R24	R: METAL FILM 1.00k 1%	0721-1001
R25	R: METAL FILM 100 2% 1/4W	0751-1012
R26	R: METAL FILM 1.00k 1%	0721-1001
R27	R: VAR COMP 100, 10 TURN	2100-0022
R28	R: METAL FILM 140 1%	0721-1400
R29	R: METAL FILM 576 1%	0721-5760
R30	R: METAL FILM 51.1 1%	0721-51R1
(R30 is selected for value, nominal value shown)		
R31	R: METAL FILM 51 2% 1/4W	0751-5102
R32	R: METAL FILM 75.0 1%	0721-75R0
R33	R: METAL FILM 294 1%	0721-2940
R34	R: METAL FILM 249 1%	0721-2490
R35	R: METAL FILM 19.1k 1%	0721-1912
R36	R: METAL FILM 169 1%	0721-1690
R37	R: METAL FILM 37.4k 1%	0721-3742
R38	R: METAL FILM 1.69k 1%	0721-1691
R39,R40	R: METAL FILM 24.9k 1%	0721-2492
R41	R: METAL FILM 110 2% 1/4W	0751-1112
R42	R: METAL FILM 470k 2% 1/4W	0751-4742
R43	R: VAR COMP 100k, 10 TURN	2100-0030
R44	R: METAL FILM 470k 2% 1/4W	0751-4742
R45,R46	R: METAL FILM 2.26k 1%	0721-2261
(R45 is matched with R58, R46 is matched with R59)		
R47,R48	R: METAL FILM 10.0k 1%	0721-1002
R49	R: METAL FILM 75 2% 1/4W	0751-7502
R50	R: VAR COMP 1k, 10 TURN	2100-0021
R51	R: METAL FILM 9.53k 1%	0721-9531
R52	R: METAL FILM 10.0k 1%	0721-1002
R53	R: METAL FILM 4.99k 1%	0721-4991
R54	R: METAL FILM 75 2% 1/4W	0751-7502
R55	R: METAL FILM 470k 2% 1/4W	0751-4742
R56	R: VAR COMP 100k, 10 TURN	2100-0030
R57	R: METAL FILM 470k 2% 1/4W	0751-4742
R58,R59	R: METAL FILM 2.26k 1%	0721-2261
(R58 is matched with R45, R59 is matched with R46)		
R60	R: VAR COMP 1k, 10 TURN	2100-0021
R61	R: METAL FILM 9.53k 1%	0721-9531

A5 BOARD DSD-1A rev. A (FMSA-1) cont.

Reference Designation	Description	Part Number
R62	R: METAL FILM 10.0k 1%	0721-1002
R63,R64	R: METAL FILM 75 2% 1/4W	0751-7502
RN1	R: NETWORK 8 PIN 10k	0908-1032
T1	TRANSFORMER: PULSE 602-12545	9100-0030
U1	IC: AD844A	1826-0052
U2	IC: NE5534	1826-0025
U3	IC: TLO72	1826-0038
U4	IC: LM311	1826-0009
U5	IC: DG419	1827-0011
U6	IC: NE5532	1826-0037
U7	IC: AD846A	1827-0008
U8	IC: NE5534	1826-0025
U9*	IC: AD776	1830-0005
*Note: beginning DSD-1A s/n 380029, U9 is replaced by the A5 Daughter Board		
U10**	IC: XO, 12.7008MHz	0415-1270
**Note: beginning DSD-1A s/n 380029, U10 is not used		
U11,U12	IC: 78L05CP	1826-0012
U13	IC: AD680	1826-0051
U14,U15	IC: 74HC14A	1822-0042
U16	IC: 78L05CP	1826-0012
U17	IC: 79L05CP	1826-0017
U18	IC: 74HC14A	1822-0042
U19	IC: CS4328	1830-0004
U20,U21	IC: NE5532	1826-0037
U22	IC: CS8402A	1823-0008
U23	IC: SM5813A	1830-0003
U24	IC: 79L05CP	1826-0017
U25	IC: 78L12CP	1826-0015
U26	IC: 79L12CP	1826-0019
U27	IC: AD1862	1830-0006
U28	IC: AD846A	1827-0008
U29,U30	IC: NE5534	1826-0025
U31	IC: AD1862	1830-0006
U32	IC: AD846A	1827-0008
U33	IC: NE5534	1826-0025
U34	IC: SSM2143P	1827-0006



DSD-1A
A5 DAUGHTER BOARD
BELAR ELECTRONICS
11-20-98
(used beginning serial number 380029)

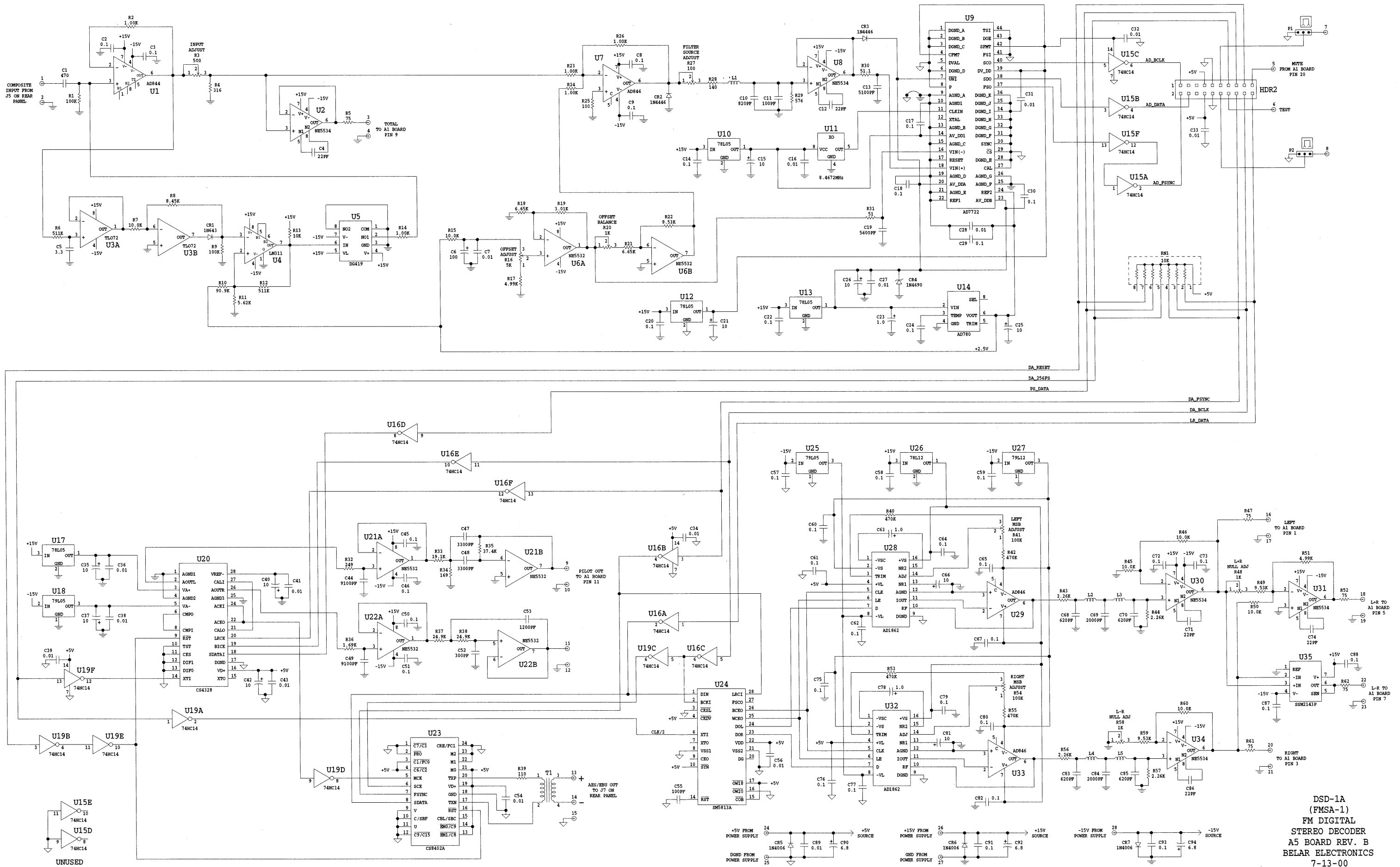


DSD-1A
A5 DAUGHTER BOARD
COMPONENT LAYOUT
BELAR ELECTRONICS
(used beginning serial number 380029)

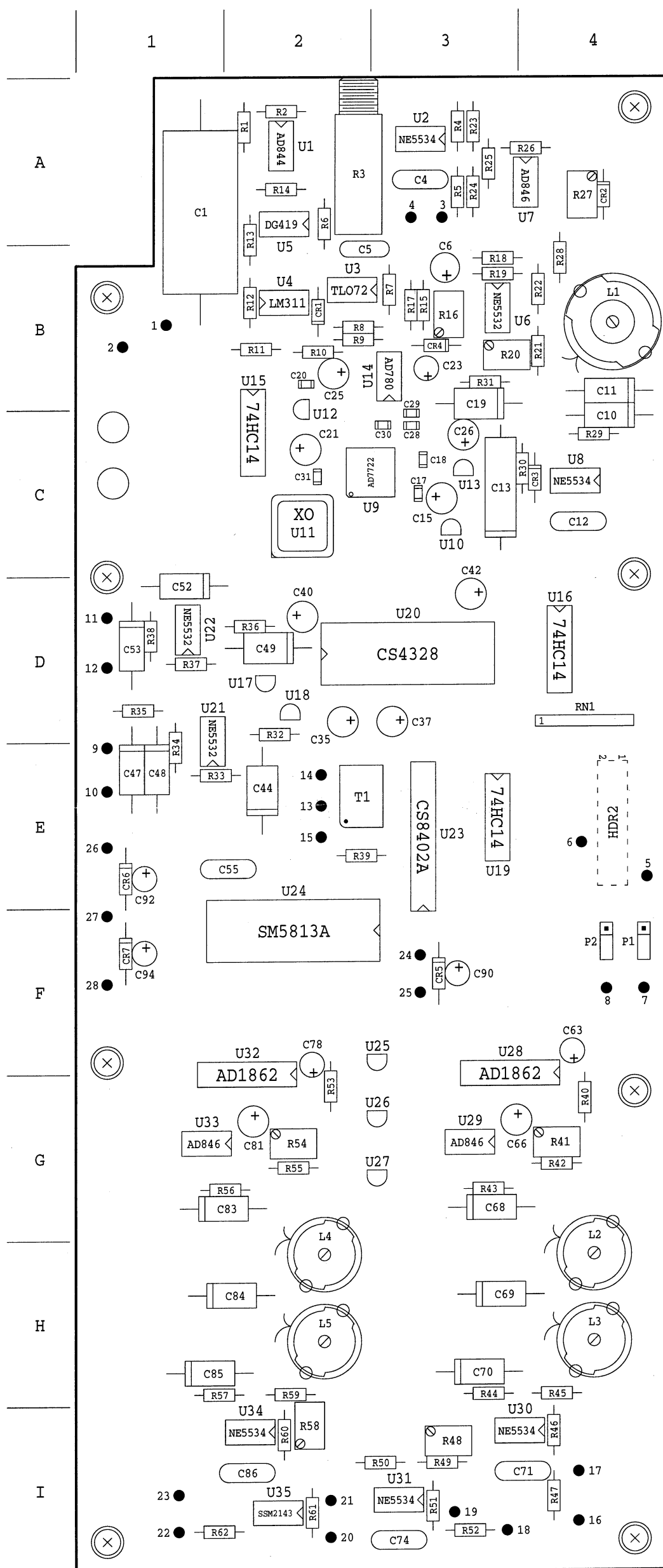
DSD-1A A5 DAUGHTER BOARD

(used with the DSD-1A A5 Rev. A Board beginning serial number 380029)

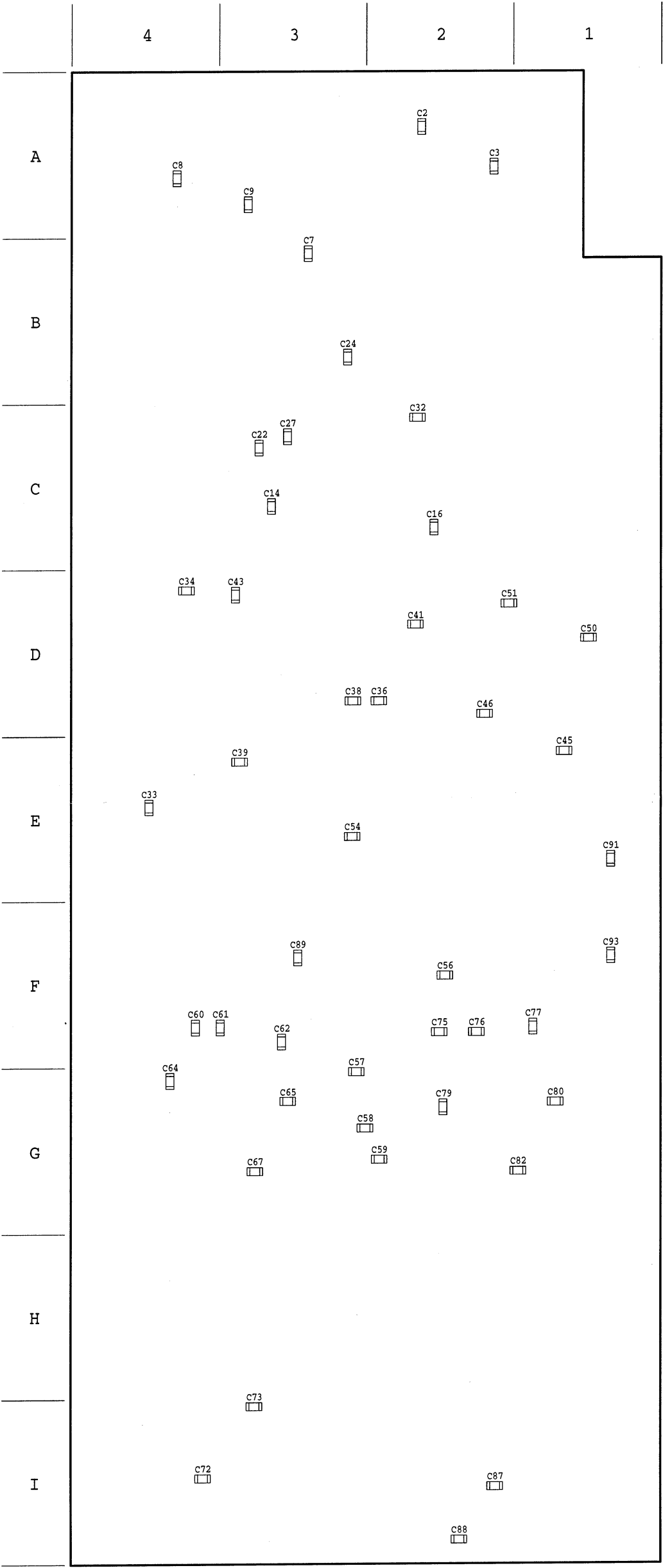
Reference Designation	Description	Part Number
C1	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C2,C3	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C4	C: FIXED TANTALUM CHIP 22uF 25V	0185-0032
C5,C6	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C7	C: FIXED TANTALUM CHIP 22uF 25V	0185-0032
C8	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C9,C10	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C11	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C12	C: FIXED TANTALUM CHIP 22uF 25V	0185-0032
C13	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
HDR1	DIP HEADER: 20 PIN	0363-0020
U1	IC: AD7722	1880-0003
U2	IC: XO, 8.4672MHz	0416-8467
U3	IC: AD780	1826-0064
U4	IC: 74HC14D	1872-0010



DSD-1A
(FMSA-1)
FM DIGITAL
STEREO DECODER
A5 BOARD REV. B
BELAR ELECTRONICS
7-13-00



DSD-1A A5 BOARD
(FMSA-1)
REV. B
COMPONENT LAYOUT
BELAR ELECTRONICS

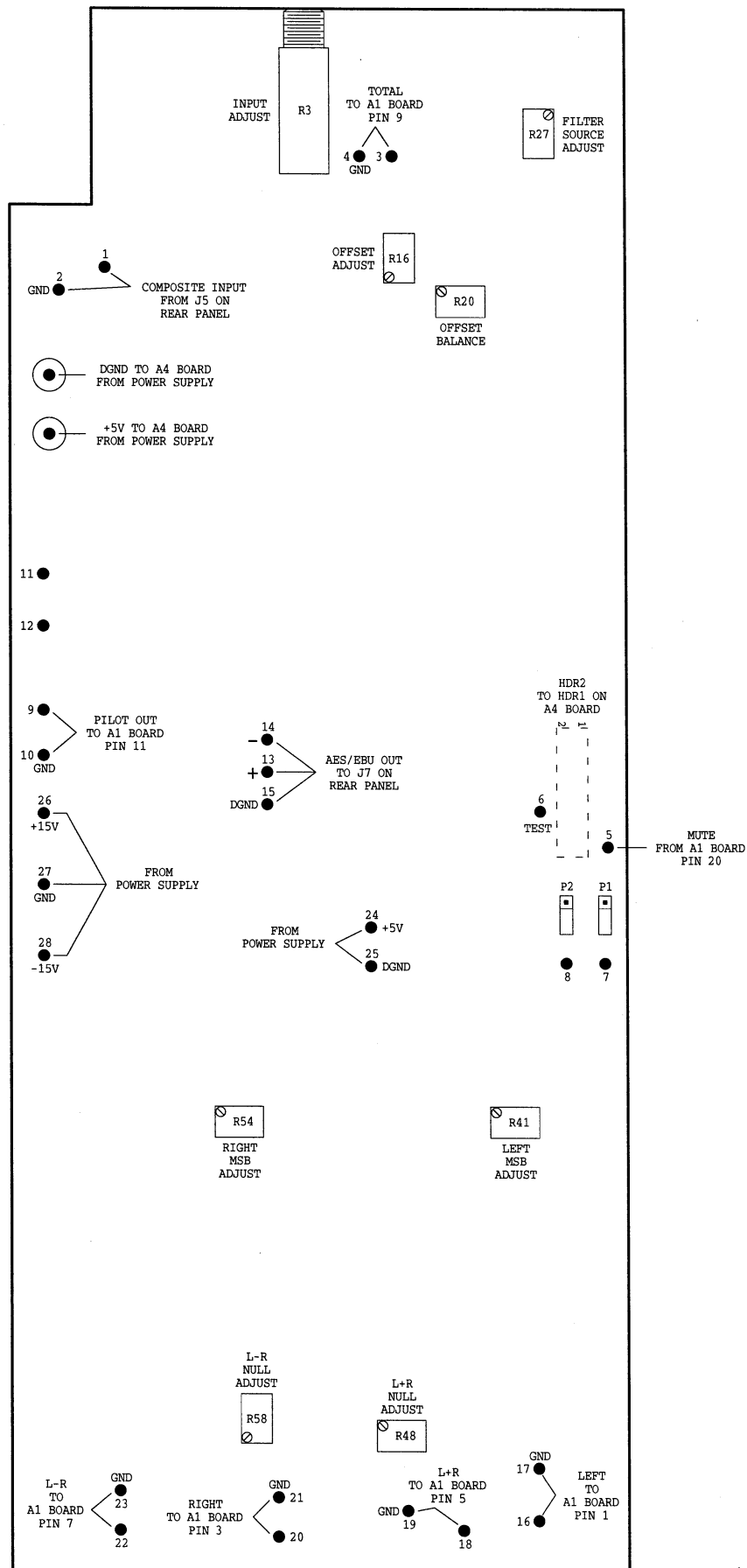


DSD-1A A5 BOARD
(FMSA-1)
REV. B
COMPONENT LAYOUT-BOTTOM
BELAR ELECTRONICS

FMSA-1 A5 BOARD REV. B
PART LOCATIONS

<u>Desig/Loc</u>		<u>Desig/Loc</u>		<u>Desig/Loc</u>		<u>Desig/Loc</u>		<u>Desig/Loc</u>		<u>Desig/Loc</u>	
C1	A1	C42	D3	C83	G2	R10	B2	R51	I3	U25	F3
C2	A2*	C43	D3*	C84	H2	R11	B2	R52	I3	U26	G3
C3	A2*	C44	E2	C85	H1	R12	B2	R53	G2	U27	G3
C4	A3	C45	E1*	C86	I2	R13	A2	R54	G2	U28	F3
C5	B2	C46	D2*	C87	I2*	R14	A2	R55	G2	U29	G3
C6	B3	C47	E1	C88	I2*	R15	B3	R56	G2	U30	I4
C7	B3*	C48	E1	C89	F3*	R16	B3	R57	H1	U31	I3
C8	A4*	C49	D2	C90	F3	R17	B3	R58	I2	U32	F2
C9	A3*	C50	D1*	C91	E1*	R18	B3	R59	H2	U33	G1
C10	C4	C51	D2*	C92	E1	R19	B3	R60	I2	U34	I2
C11	B4	C52	D1	C93	F1*	R20	B3	R61	I2	U35	I2
C12	C4	C53	D1	C94	F1	R21	B4	R62	I1		
C13	C3	C54	E3*			R22	B4			<u>pins</u>	
C14	C3*	C55	E2	CR1	B2	R23	A3	RN1	D4	1	B1
C15	C3	C56	F2*	CR2	A4	R24	A3			2	B1
C16	C2*	C57	G3*	CR3	C4	R25	A3	T1	E2	3	A3
C17	C3	C58	G3*	CR4	B3	R26	A4			4	A3
C18	C3	C59	G2*	CR5	F3	R27	A4	U1	A2	5	E4
C19	B3	C60	F4*	CR6	E1	R28	B4	U2	A3	6	E4
C20	B2	C61	F3*	CR7	F1	R29	C4	U3	B2	7	F4
C21	C2	C62	F3*			R30	C4	U4	B2	8	F4
C22	C3*	C63	F4	HDR2	E4	R31	B3	U5	A2	9	E1
C23	B3	C64	G4*			R32	D2	U6	B3	10	E1
C24	B3*	C65	G3*	L1	B4	R33	E1	U7	A4	11	D1
C25	B2	C66	G3	L2	H4	R34	E1	U8	C4	12	D1
C26	C3	C67	G3*	L3	H4	R35	D1	U9	C2	13	E2
C27	C3*	C68	G3	L4	H2	R36	D2	U10	C3	14	E2
C28	C3	C69	H3	L5	H2	R37	D1	U11	C2	15	E2
C29	C3	C70	H3			R38	D1	U12	C2	16	I4
C30	C3	C71	I4	P1	F4	R39	E2	U13	C3	17	I4
C31	C2	C72	I4*	P2	F4	R40	G4	U14	B3	18	I3
C32	C2*	C73	I3*			R41	G4	U15	C2	19	I3
C33	E4*	C74	I3	R1	A2	R42	G4	U16	D4	20	I2
C34	D4*	C75	F2*	R2	A2	R43	G3	U17	D2	21	I2
C35	D2	C76	F2*	R3	A2	R44	H3	U18	D2	22	I1
C36	D2*	C77	F1*	R4	A3	R45	H4	U19	E3	23	I1
C37	D3	C78	F2	R5	A3	R46	I4	U20	D3	24	F3
C38	D3*	C79	G2*	R6	A2	R47	I4	U21	D1	25	F3
C39	E3*	C80	G1*	R7	B3	R48	I3	U22	D1	26	E1
C40	D2	C81	G2	R8	B2	R49	I3	U23	E3	27	F1
C41	D2*	C82	G1*	R9	B2	R50	I3	U24	F2	28	F1

*note: These locations are on bottom of pc board.



DSD-1A A5 BOARD
(FMSA-1)
REV. B

CONNECTIONS & ADJUSTMENTS
BELAR ELECTRONICS

A5 BOARD DSD-1A REV. B (FMSA-1)

Reference Designation	Description	Part Number
C1	C: FIXED ELEC 470uF 25V NON-POLAR	0180-0037
C2, C3	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C4	C: FIXED MICA 22pF 5%	0140-2205
C5	C: FIXED CERAMIC 3.3uF 50V	0151-0011
C6	C: FIXED TANT 100uF 6.3V	0185-0010
C7	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C8, C9	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C10	C: FIXED POLY 820pF 2.5% 160V	0130-8212
C11	C: FIXED POLY 100pF 2.5% 160V	0130-1012
C12	C: FIXED MICA 22pF 5%	0140-2205
C13	C: FIXED POLY 5100pF 1% 160V (SELECTED)	0130-5122
C14	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C15	C: FIXED TANT 10uF 16V	0185-0007
C16	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C17, C18	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C19	C: FIXED POLY 5600pF 2.5% 160V	0130-5622
C20	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C21	C: FIXED TANT 10uF 16V	0185-0007
C22	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C23	C: FIXED TANT 1uF 35V	0185-0006
C24	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C25, C26	C: FIXED TANT 10uF 16V	0185-0007
C27, C28	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C29, C30	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C31 thru C34	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C35	C: FIXED TANT 10uF 16V	0185-0007
C36	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C37	C: FIXED TANT 10uF 16V	0185-0007
C38, C39	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C40	C: FIXED TANT 10uF 16V	0185-0007
C41	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C42	C: FIXED TANT 10uF 16V	0185-0007
C43	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C44	C: FIXED POLY 9100pF 2.5% 160V	0130-9122
C45, C46	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C47, C48	C: FIXED POLY 3300pF 2.5% 160V	0130-3322
C49	C: FIXED POLY 9100pF 2.5% 160V	0130-9122
C50, C51	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C52	C: FIXED POLY 300pF 2.5% 160V	0130-3012
C53	C: FIXED POLY 1200pF 2.5% 160V	0130-1222
C54	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C55	C: FIXED MICA 100pF 5%	0140-1015
C56	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C57 thru C62	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C63	C: FIXED TANT 1uF 35V	0185-0006
C64, C65	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C66	C: FIXED TANT 10uF 16V	0185-0007
C67	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C68	C: FIXED POLY 620pF 2.5% 160V (C68 is matched with C83)	0130-6212

A5 BOARD DSD-1A REV. B (FMSA-1) cont.

Reference Designation	Description	Part Number
C69	C: FIXED POLY 2000pF 2.5% 160V (C69 is matched with C84)	0130-2022
C70	C: FIXED POLY 620pF 2.5% 160V (C70 is matched with C85)	0130-6212
C71	C: FIXED MICA 22pF 5%	0140-2205
C72, C73	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C74	C: FIXED MICA 22pF 5%	0140-2205
C75 thru C77	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C78	C: FIXED TANT 1uF 35V	0185-0006
C79, C80	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C81	C: FIXED TANT 10uF 16V	0185-0007
C82	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C83	C: FIXED POLY 620pF 2.5% 160V (C83 is matched with C68)	0130-6212
C84	C: FIXED POLY 2000pF 2.5% 160V (C84 is matched with C69)	0130-2022
C85	C: FIXED POLY 620pF 2.5% 160V (C85 is matched with C70)	0130-6212
C86	C: FIXED MICA 22pF 5%	0140-2205
C87, C88	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C89	C: FIXED CERAMIC CHIP 0.01uF 50V C1206	0151-0021
C90	C: FIXED TANT 6.8uF 25V	0185-0002
C91	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C92	C: FIXED TANT 6.8uF 25V	0185-0002
C93	C: FIXED CERAMIC CHIP 0.1uF 50V C1206	0151-0014
C94	C: FIXED TANT 6.8uF 25V	0185-0002
CR1	DIODE: 1N643	1900-0017
CR2, CR3	DIODE: 1N4446	1900-0002
CR4	DIODE: 1N4690	1900-0031
CR5 thru CR7	DIODE: 1N4006	1900-0016
HDR2	HEADER RECEPTACLE: 20 PIN	0361-2020
L1 thru L5	INDUCTOR: BELAR	
P1, P2	PLUG: 3 PIN, PC MOUNT	0365-0030
--	JUMPER: 2 POSITION (USED WITH P1 & P2)	0365-0028
R1	R: METAL FILM 100k 1%	0721-1003
R2	R: METAL FILM 1.00k 1%	0721-1001
R3	R: VAR COMP 500, 10 TURN	2100-0028
R4	R: METAL FILM 316 1%	0721-3610
R5	R: METAL FILM 75 2% 1/4W	0751-7502
R6	R: METAL FILM 511k 1%	0721-5113
R7	R: METAL FILM 10.0k 1%	0721-1002
R8	R: METAL FILM 8.45k 1%	0721-8451
R9	R: METAL FILM 100k 1%	0721-1003
R10	R: METAL FILM 90.9k 1%	0721-9092

A5 BOARD DSD-1A REV. B (FMSA-1) cont.

Reference Designation	Description	Part Number
R11	R: METAL FILM 5.62k 1%	0721-5621
R12	R: METAL FILM 511k 1%	0721-5113
R13	R: METAL FILM 10k 2% 1/4W	0751-1032
R14	R: METAL FILM 1.00k 1%	0721-1001
R15	R: METAL FILM 10.0k 1%	0721-1002
R16	R: VAR COMP 5k, 10 TURN	2100-0020
R17	R: METAL FILM 4.99k 1%	0721-4991
R18	R: METAL FILM 6.65k 1%	0721-6651
R19	R: METAL FILM 3.01k 1%	0721-3011
R20	R: VAR COMP 1k, 10 TURN	2100-0021
R21	R: METAL FILM 6.65k 1%	0721-6651
R22	R: METAL FILM 9.53k 1%	0721-9531
R23, R24	R: METAL FILM 1.00K 1%	0721-1001
R25	R: METAL FILM 100 2% 1/4W	0751-1012
R26	R: METAL FILM 1.00k 1%	0721-1001
R27	R: VAR COMP 100, 10 TURN	2100-0022
R28	R: METAL FILM 140 1%	0721-1400
R29	R: METAL FILM 576 1%	0721-5760
R30	R: METAL FILM 51.1 1%	0721-51R1
	(R30 is selected for value, nominal value shown)	
R31	R: METAL FILM 51 2% 1/4W	0751-5102
R32	R: METAL FILM 249 1%	0721-2490
R33	R: METAL FILM 19.1k 1%	0721-1912
R34	R: METAL FILM 169 1%	0721-1690
R35	R: METAL FILM 37.4k 1%	0721-3742
R36	R: METAL FILM 1.69k 1%	0721-1691
R37, R38	R: METAL FILM 24.9k 1%	0721-2492
R39	R: METAL FILM 110 2% 1/4W	0751-1112
R40	R: METAL FILM 470k 2% 1/4W	0751-4742
R41	R: VAR COMP 100k, 10 TURN	2100-0030
R42	R: METAL FILM 470k 2% 1/4W	0751-4742
R43, R44	R: METAL FILM 2.26k 1%	0721-2261
	(R43 is matched with R56, R44 is matched with R57)	
R45, R46	R: METAL FILM 10.0k 1%	0721-1002
R47	R: METAL FILM 75 2% 1/4W	0751-7502
R48	R: VAR COMP 1k, 10 TURN	2100-0021
R49	R: METAL FILM 9.53k 1%	0721-9531
R50	R: METAL FILM 10.0k 1%	0721-1002
R51	R: METAL FILM 4.99k 1%	0721-4991
R52	R: METAL FILM 75 2% 1/4W	0751-7502
R53	R: METAL FILM 470k 2% 1/4W	0751-4742
R54	R: VAR COMP 100k, 10 TURN	2100-0030
R55	R: METAL FILM 470k 2% 1/4W	0751-4742
R56, R57	R: METAL FILM 2.26k 1%	0721-2261
	(R56 is matched with R43, R57 is matched with R44)	
R58	R: VAR COMP 1k, 10 TURN	2100-0021
R59	R: METAL FILM 9.53k 1%	0721-9531
R60	R: METAL FILM 10.0k 1%	0721-1002
R61, R62	R: METAL FILM 75 2% 1/4W	0751-7502

A5 BOARD DSD-1A REV. B (FMSA-1) cont.

Reference Designation	Description	Part Number
RN1	R: NETWORK 8 PIN 10k	0908-1032
T1	TRANSFORMER: PULSE 602-12545	9100-0030
U1	IC: AD844A	1826-0052
U2	IC: NE5534	1826-0025
U3	IC: TLO72	1826-0038
U4	IC: LM311	1826-0009
U5	IC: DG419	1827-0011
U6	IC: NE5532	1826-0037
U7	IC: AD846A	1827-0008
U8	IC: NE5534	1826-0025
U9	IC: AD7722	1880-0003
U10	IC: 78L05CP	1826-0012
U11	IC: XO, 8.4672MHz	0416-8467
U12,U13	IC: 78L05CP	1826-0012
U14	IC: AD780	1826-0064
U15,U16	IC: 74HC14A	1822-0042
U17	IC: 78L05CP	1826-0012
U18	IC: 79L05CP	1826-0017
U19	IC: 74HC14A	1822-0042
U20	IC: CS4328	1830-0004
U21,U22	IC: NE5532	1826-0037
U23	IC: CS8402A	1823-0008
U24	IC: SM5813A	1830-0003
U25	IC: 79L05CP	1826-0017
U26	IC: 78L12CP	1826-0015
U27	IC: 79L12CP	1826-0019
U28	IC: AD1862	1830-0006
U29	IC: AD846A	1827-0008
U30,U31	IC: NE5534	1826-0025
U32	IC: AD1862	1830-0006
U33	IC: AD846A	1827-0008
U34	IC: NE5534	1826-0025
U35	IC: SSM2143P	1827-0006