BA712/713 INFORMATION

GENERAL

BA712 and BA713 are fixed together to form a sandwich assembly at the top end of each channel module. They select and amplify the microphone, line, or tape inputs up to the nominal -10dBu level used prefade.
The assembly also regulates the power supplies for the whole channel module, RF filters each input, and has a phase inversion facility.

USER CONTROLS

Mic/Line/Tape input selection, Phase, Mic gain (20dB to 80dB in 6dB steps). Gain Trim (0dB ± 10dB continuously variable).

DETAIL

SEE ET10207 (Circuit Diagram) AND EB20364
(Channel module block diagram)

The upper left-hand part of EB20364 shows the major functions of the BA712/713 assembly in relation to the rest of the channel strip. The circuit diagram ET10207 shows both PCB's (enclosed in chain-dotted line) and their interconnecting flexistrip.
Direct connections between connectors on the PCB are shown as "tie lines" in the bottom left-hand table, if they do not involve any circuitry.

BRIEF DESCRIPTION

All three inputs (Microphone, Line, and Tape) are received from XLR connectors on a bracket at the top of the channel strip. They each pass through an L-C RF filter and into an input amplifier. The microphone amplifier (see below) has variable gain from 10dB to 70dB in 6dB steps, while the line and tape amplifiers (see below) have fixed gains.
Microphone or Line amplifier outputs are selected by S1 ("LINE") on BA712 the chosen signal passing through the ± 10dB "TRIM" circuit consisting of RV1, R1, and R2 on BA713 (which gives an attenuation of 0dB to -20dB with -10dB at 50% rotation) followed by IC1c on BA712 (which gives 10dB of gain).
Trim (from IC1c) or Tape outputs are selected by S3 ("TAPE") which is mechanically interlocked with S1 to give the following:-

Both "LINE" and "TAPE" unpressed	: Mic selected
"LINE" only pressed	: Line selected
"TAPE" only pressed	: Tape selected
"LINE" and "TAPE" both pressed (interlock defeated)	: Tape selected

From S3 the signal goes directly to S4 ("PHASE") and to a phase inverting amplifier (IC1b) which is also connected to S4. With "PHASE" unpressed the assembly has non-inverted output, when pressed the output is inverted.
The BA712/713 main output signal is taken from S4 and is called; "CHANNEL TO FILTERS". The output of the Tape input amplifier (IC1a) is also sent to the filters ("TAPE O/P TO FILTERS SWITCH") and to the console track meters ("TAPE O/P TO METERS").

MICROPHONE INPUT AMPLIFIER

This consists of a 10dB step-up transformer (T1 on BA712) followed by a non inverting amplifier (IC1 on BA713) with switched gain. The transformer input is balanced and floating and has phantom power applied from a +48V supply via two 1% high stability resistors R1 and R2 on BA712. Input impedance is 1K2 ± 10% from 40Hz to 15kHz. IC1 is a high performance operational amplifier with D.C. operating conditions set by R3 and R4, and A.C. gain set by the switched potentiometer chain formed by the 11 - position S1, RP1, and RP2, all on BA713. RP1 and RP2 each contain precision 0.1% ratio-matched resistors ensuring accurate and reliable gain settings. S1 selects what proportion of the output signal is fed back to the op amp from the RP1/2 resistor string and thus sets the gain between 0dB and 60dB. Taking into account the transformer voltage gain and the subsequent 10dB gain in the channel strip, the microphone amplifier has a gain range of +20 to +80dB.

LINE AND TAPE INPUT AMPLIFIERS

These are electronically balanced input amplifier (IC1a and d on BA712) with transient overvoltage protection provided by four diodes on each. Gain is -10dB to bring the level down to that required prefade in the channel strip The Line input has an alternative -14dB gain setting selected by a DIL swit on the PC board (S2 on BA712). Precision 0.1% ratio-matched resistor packs RP1, 2, 3 on BA712 are used to assure the performance of these amplifiers.

POWER REGULATORS

Integrated three-terminal devices (IC2, 3 on BA712) are used to regulate the raw ±22V input power to ±18V at up to 500mA for the BA712/713 assembly and the rest of the channel strip. C17 and 18 ensure stability, D9, 10 prevent reversed output polarities under fault conditions, R18, 19 and C15, 16 improve noise performance. IC2 and 3 are heat-sunk onto the XLR bracket.

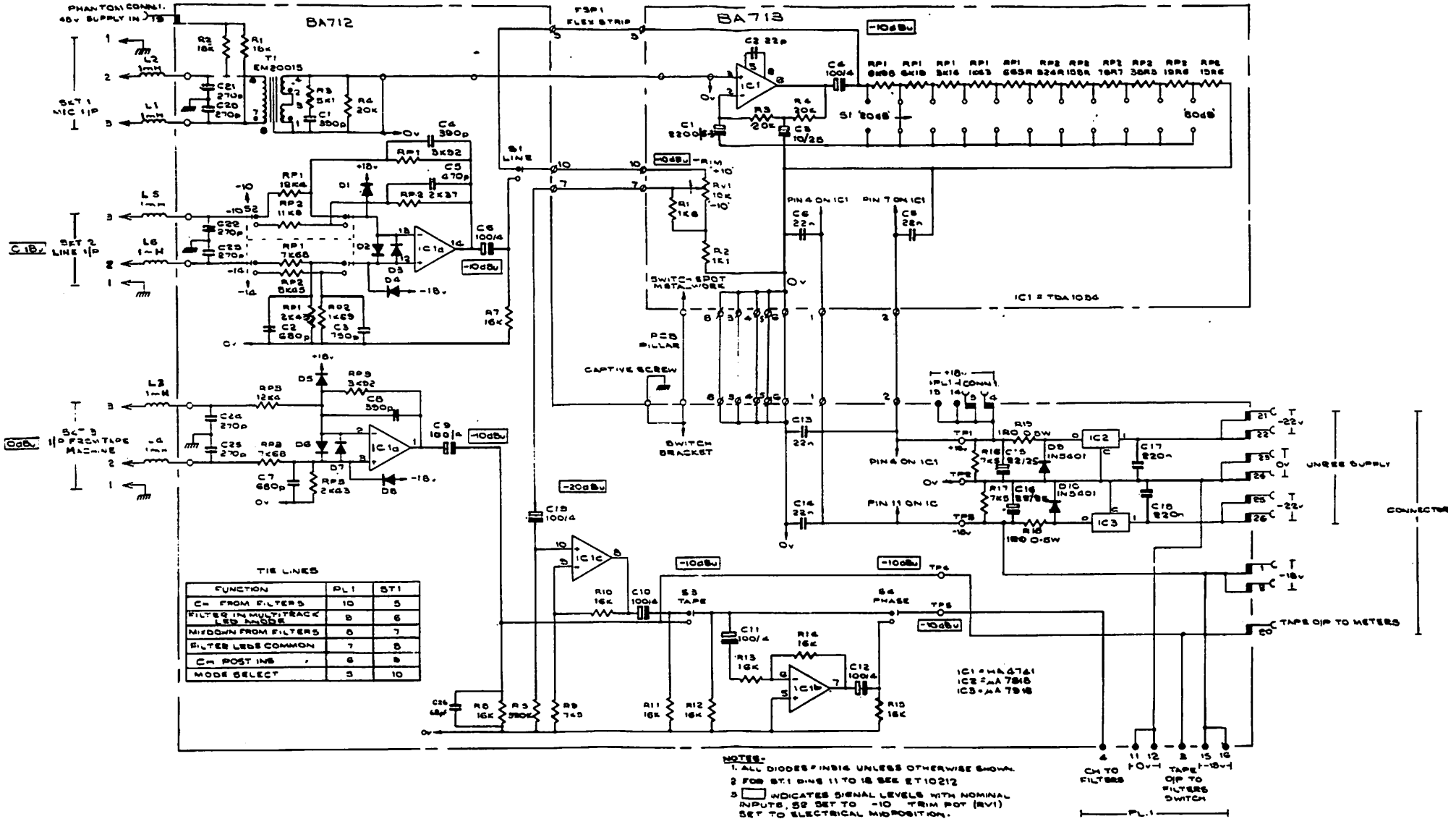
D.C. SUPPLIES

BA712/713 runs from ±22V unregulated power, and also uses +48V regulated power for phantom powering microphones.

TEST POINTS

Test points are provided as follows on BA712:

TP1	Regulated +18V
TP2	0V reference
TP3	Regulated -18V
TP4	"TAPE OUTPUT" signal
TP5	Main "CHANNEL" output signal

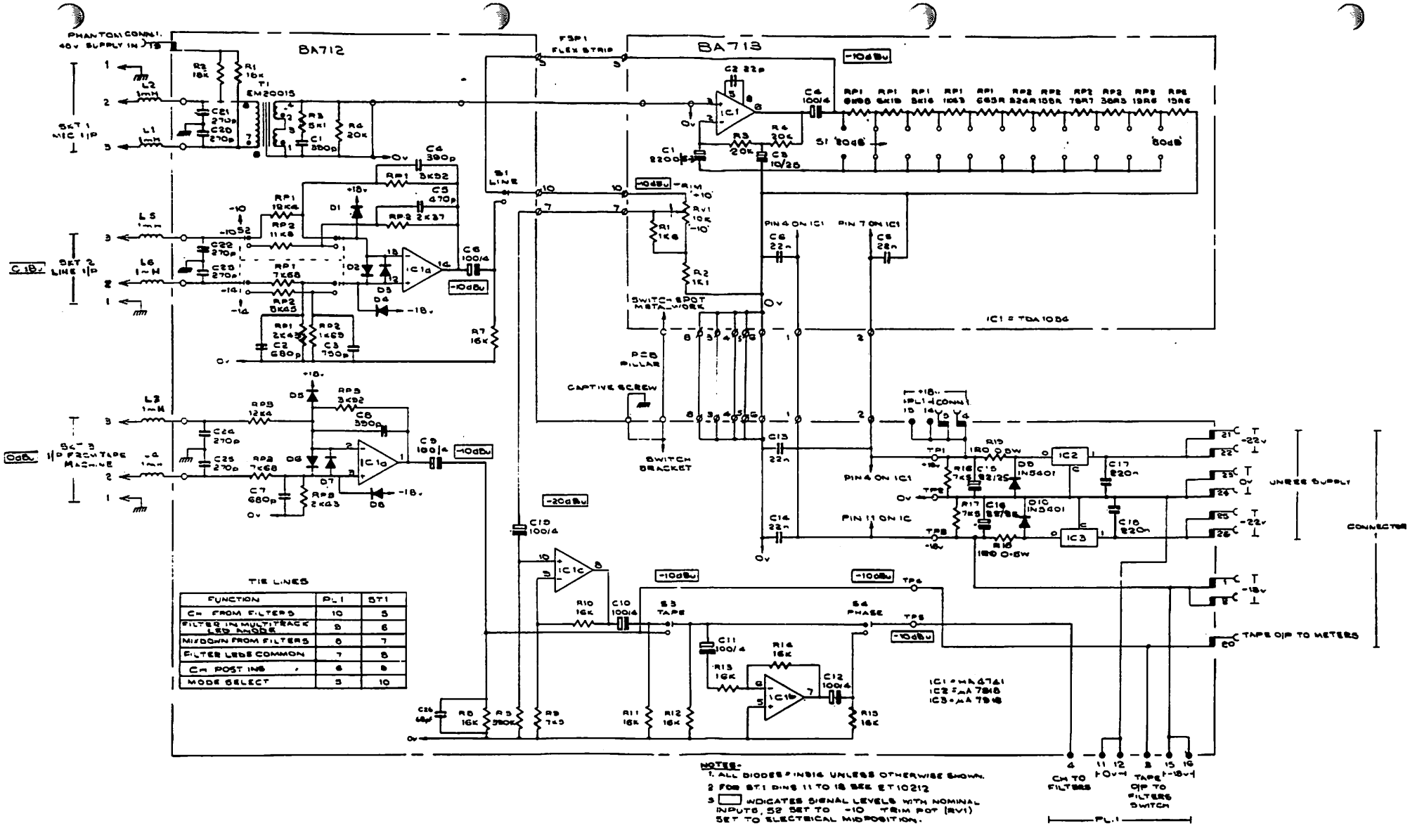


TIE LINES

FUNCTION	PL1	ST1
C- FROM FILTERS	10	5
FILTER IN MULTITRACK LED MODE	8	6
MIXDOWN FROM FILTERS	6	7
FILTER LEDS COMMON	7	8
Ch POST INS	9	9
MODE SELECT	5	10

NOTES:
1. ALL DIODES = IN914 UNLESS OTHERWISE SHOWN.
2. FOR ST.1 PINS 11 TO 16 SEE ET 10212
3. ☐ INDICATES SIGNAL LEVELS WITH NOMINAL INPUTS, S2 SET TO -10 TRIM POT (RV1) SET TO ELECTRICAL MIDPOSITION.

TITLE MIC/LINE INPUT MODULE INC BA712 & BA713 DRG.No. ET10207



TITLE MIC/LINE INPUT MODULE INC BA712 & BA713 DRG.No ET10207

TITLE: MIC - DI - ASSEMBLY

PART LIST No. PL80000 SHT. 1. OF 8

FIRST USED ON:

ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
1	MANUFACTURING INFORMATION FOR			BA 712
2	EU 10712	MASTER LINE DIAGRAM	A1	
3	EV 10712	MANUFACTURING DETAILS	A1	
4	EW 10712	COMPONENT LAYOUT	A1	
5	ET 10207	CIRCUIT DIAGRAM		ISSUE 5
6				
7	MANUFACTURING INFORMATION FOR			BA 713
8	EU 10713	MASTER LINE DIAGRAM	A1	
9	EV 10713	MANUFACTURING DETAILS	A3	
10	EW 10713	COMPONENT LAYOUT	A1	
11	EZ 10712	TEST SPECIFICATION		ISSUE 1
12				
13	INDEX	OF SUBASSEMBLIES		
14	PAGE 2.	— PAGE 4. BA 712		TO BE KITTED SEPERATELY
15	PAGE 5.	— PAGE 6. BA 713		
16	PAGE 7.	INTERFACE COMPONENTS		
17				
18				
19				
20				

B/W B/W

	14	13	12	11	10	9	8
	15·5·81	5·2·81	10·12·80	25 NOV 80	28·6·80	31·5·80	28·4·80
PG 8 ADDED	30722	30657	61063	30553	60900	60751	30414

15
6·6·81
30739

	ISSUE	A	1	2	3	4	5	6	7
DRAWN: M.FROGLEY	DATE	28/2/79	30/5/79	6-7-79	3-8-79	20-8-79	28-9-79	7-2-80	10-3-80
CHECKED:	C/N No.			60474	60499	20214	30204	60751	60793

PART LIST No: PL80000 SHT. 1. OF 8

LACWELL 21647

ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
21	COMPONENTS FOR SUBASSEMBLY			BA 712
22	EV10712	PRINTED CRICUIT BOARD	1.	ISSUE 13
(8) 23	CA10681	CAPACITOR MULLARD 68pF	1	C26
24	CA12700	CAPACITOR MULLARD 270 pF	6	C20-25
(11) 25	CA13900	—"— SUFLEX 390pF	1	C1.
(11) 26	CA10470	—"— 47pF	3	C4,C5,C8
(11) 27	CA10680	—"— 68pF	3	C2,C3,C7
(11) 28	—			
29	CA20223	—"— MULLARD 22nF	2.	C13.14.
30	CA61000	—"— ELECTROLYTIC 100µF 4V	6.	C6,9,10,11,12,19.
(5) 31	CA60220	CAPACITOR MULLARD 22µF 25V	2.	C15.16
(5) 32	CA22202	CAPACITOR SIEMENS 220n 100V	2.	C17.18.
33				
34				
35				
36	CN20062	SWITCHCRAFT XLR 3 WAY	3.	SKT1.2.3
37	CN20282	IC SOCKET 14 WAY	1.	FOR ITEM N° 50
38				
39	CN10326	MALE HEADER 90° 16 WAY	1.	PL1
40				
41				
(5)(3) 42	FM11600	SCREW M3×6mm CSK. POZI. HD.	6 F	FOR ITEM 36
(5)(3) 43	FM11620	—"— M3×5mm PAN. POZI. HD.	7 F	FOR ITEMS 60 & 87
44				

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PART LIST No. [illegible]

SHT. 2. OF 8

ADMEL P/2/048

Rupert Neve & Company Ltd.

	ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
	45	DD10002	DIODE IN 914	8.	D1–8.
(6)	46	DD10003	—— " —— IN 5401	2.	D9,10
	47				
	48	FG10502	POP RIVET 3/32 X 0·2" LG	1 F	FOR ITEM N° 90
	49				
	50	IC20010	I.C. HA 4741	1.	IC1.
	51	IC20830	—— " —— μA 7818	1.	IC2.
	52	IC20860	—— " —— μA 7918	1.	IC3.
	53				
	54				
	55				
(13)(3)	56	IN 10304	INDUCTOR 1 mH	4	L3–6.
(13)	57	IN 10307	INDUCTOR 1mH	2	L1,2
	58				
	59				
	60	MU21303	XLR MTG BKT	1.	
	61				
	62				
	63				
(5)	64	PR15000	RESISTOR PACK 8 PIN	2.	PR 1, 3. EM21010
(5)	65	PR15001	———— " ————	1.	PR 2. EM21011
	66				
(13)	67	RA510RO	RESISTOR TR4 510 OHMS	2F	R24,25 FIT ACROSS L1,2
(13)	68	WA17002	SOLDER PIN	4F	

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PART LIST No. PL 80000

SHT. 3. OF 8

	ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
	69	RA005K1	RESISTOR TR4 5K1 OHMS	1F	R3.
	70	RA007K5	——— " ——— 7K5 — " —	3F	R9,16,17.
	71	RA016KO	——— " ——— 16K — " —	8F	R7,8,10-15
	72	RA020KO	——— " ——— 20K — " —	1F	R4.
(5)	73	RA390KO	——— " ——— 390K — " —	1F	R5
(6)(5)	74	RE018KO	RESISTOR 1% 18K OHMS	2.	R1,2.
(11)	75	RA002KO	RESISTOR TR4 2KO OHMS	4F	R20,21,22,23 FITACROSS L3-LG
(5)	76				
(5)	77	RG001RO	RESISTOR VTM 1Ω ½W	2	R18,19
	78				
	79				
(6)	80	SA10900	TRANSISTOR MTG KIT	2.	FOR ITEM N°S 51 & 52.
	81				
	82				
	83				
(2)	84	SW10402	2W. 4P DIL SWITCH	1.	S2.
	85	SW20540	3B.2P DIALISTAT SWITCH	1.	S1,3,4.
	86				
(2)	87	TF 10015	TRANSFORMER EM 20015	1	T1
	88				
	89	WA17005	TEST POINT TERMINAL	5F	TP1—5.
(5)	90	WA17207	8BA SOLDER TAG	1F	FOR ITEM N°S 85
	91				
	92				

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PART LIST No. PL80000

SHT. 4. OF 8.

ADMEL P/2/048

Rupert Neve & Company Ltd.

	ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
	93	COMPONENTS FOR SUBASSEMBLY BA713			
	94	EV10713	PRINTED CIRCUIT BOARD	1.	ISSUE 12
	95				
	96				
	97	CA10221	CAPACITOR CERAMIC 22pF	1.	C2.
	98	CA20223	" 22nF	2	C5. 6.
(5)	99	CA61000	" ELECTROLYTIC 100µF 40v	1	C4.
	100	CA72200	" 2200µF 63v	1.	C1.
(5)	101	CA60103	CAPACITOR ELECTROLYTIC 10µF 25V	1	C3
	102				
	103				
	104	CN20162	I.C. SOCKET 8 WAY	1.	FOR ITEM N° 108
	105				
	106				
	107				
	108	IC20007	I.C. TDA 1034 B.	1.	IC1
	109				
	110				
	111				
(5)	112	PR16200	RESISTOR PACK 8 PIN	1.	RP1. EM21012
(5)	113	PR16201	"	1.	RP2. EM21013
	114				
	115				
	116				

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CHECKED: AWD

PART LIST No. PL 80000

SHT. 5 OF 8

	ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
⑤	117	PT15031	SFER POT 10K LIN	1.	RV 1.
	118				
	119				
	120				
⑤	121	RA001K1	RESISTOR TR4 1K1 OHMS	1.F	R2.
⑤	122	RA001K6	——"—— 1K6 —"—	1F	R1.
	123	RA020K0	——"—— 20K —"—	2F	R3.4.
	124				
	125				
	126				
⑤	127	SR10405	ELMA-08 SWITCH 1P. 11W.	1.	S1.
	128				
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PART LIST No. PL80000

SHT. 6. OF 8

ADMEL P/2/048

Rupert Neve & Company Ltd.

	ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
	141	INTERFACE	COMPONENTS		
	142				
(4)	143	CN20521	WRAP POST SKT 26 WAY	1.	
(4)	144	CN 30408	STRAIN RELIEF ANSLEY 26 WAY	1	FOR ITEM 143
	145				
	146				
(7)	147	FA12703	SELF TAPPING SCREW	4F	FOR ITEN N° 154
	148		PAN POZI HD N°4 x 3/8" LG		
	149				
	150	FM11620	SCREW M3 x 5 mm SL.CH.HD	4F	FOR ITEM N° 155
	151				
	152				
	153				
	154	MG22250	P.C.B. BRIDGE	1.	
	155	MG22248	P.C.B. PILLAR	2.	
(5)	156	MG22251	P.C.B RETAINING SCREW	1.	FOR ITEM 154
	157				
	158				
(5)	159	WA17603	SOLDER TRANSITION 26W	1.	ST1
(5)	160	WR74381	FLEXI STRIP 20 WAY	1.	FSP1
	161				
	162				
(2)(5)	163	WR75000	MINIATURE SINGLE SCREENED CABLE	F	100mm TIE CABLE USING LACING CORD TO BRASS PILLAR ADJACENT TO BELCLERE TRANSFORMER & FLEXI-STRIP.
	164	WR71003	FLAT CABLE 26 WAY		140mm

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PART LIST No. PL80000

SHT. 7. OF 8.

ADMEL P12/048

Rupert Neve & Company Ltd.

(14) HT. 8 ADDED.

ITEM No.	N.E.L. PART No.	DESCRIPTION	No. OFF	
165	POSSIBLE EXTRA COMPONENTS			
166				
(15)(14) 167	RF	ADJUST ON TEST RESISTOR	2	A.O.T. 1,3 (SEE EZ10712)
168				
169				
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DRAWN: J.D.BULLARD

CHECKED:

PART LIST No. PL80000

SHT. 8 OF 8