



Service Manual

MA 240 Stereo Power Amplifier

Myryad Systems Ltd.
2 Pipers Wood
Waterberry Drive
Waterlooville
Hants, PO7 7XU
Tel: +44 (0) 1705 265508
Fax: +44 (0) 1705 231407

Contents

Preliminary Service Notes	3
Alignment Procedure	3
Disassembling the Fascia	4
Main PCB Component Layout	
Circuit diagrams	1921 19212 19213 19214 1922
Parts Lists:	1921 (2 pages) 1922

Preliminary Service Notes: **MA 240**

These notes are intended to provide trained electronics service personnel with some assistance in dismantling the unit and repairing faults.

Removing the top cover gains access to all the amplifier circuitry:- the Main PCB, Power Supply PCB and the mains transformer. Access to the Power Supply PCB is more easily obtained after first removing the fascia sub-assembly (see overleaf).

To get access to the microprocessor/switch PCB the fascia assembly must be removed and disassembled (see overleaf). Since this can take some time, it is recommended that faults be located positively to this area if possible, before dismantling.

General Points for Guidance

1. Should the transformer overheat as a result of prolonged over-driving, the internal cut-out within the transformer will operate. The cut-out is of the self-resetting type, but the transformer may take a considerable time to cool down sufficiently for it to reset.
2. The power amplifier outputs are relay protected. Short circuits applied to the speaker terminals will cause the relay to drop out, as will a variety of electrical faults within either amplifier channel. The relay will reset about four seconds after the fault is cleared.

Alignment Procedure: **MA 240**

Output stage idle current.

This should be re-adjusted if any components are changed in either channel of the power amplifier. The idle current should be set to approximately 34mA in each pair of output transistors.

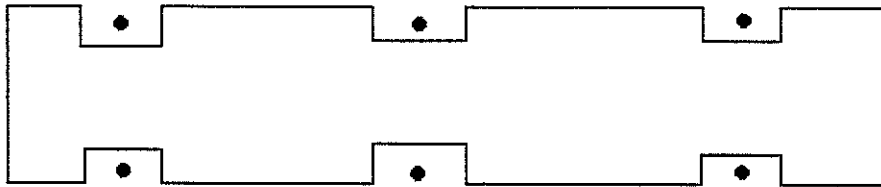
The procedure is:-

- a) Before switching on, ensure that RV301 and RV401 are both set fully counter-clockwise.
- b) Monitor the voltage between Q317 and Q318 emitters (across R330 + R331), marked "LH Iq" on the PCB - (Q415, Q418, R428, and R431, marked "RH Iq", for the RHC).
- c) Adjust RV301 (RV401 on RHC) to set this voltage to around 6mV.
- d) The idle current will rise as the driver and output transistors warm up. Allow about 10 minutes for the transistor temperatures to stabilize and re-adjust RV301/RV401 to set the voltage on each channel to 15mV \pm 2mV.

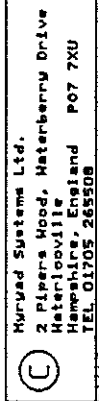
Disassembling the MA 240 Fascia

1. Switch unit OFF at rear and remove power cord.
2. Remove cover
4 x M4x6 black machine screws at rear
6 x M4x6 black machine screws (3 at each side)
3. Unplug - white 6-way FFC cable from JP501.
4. Remove sub-fascia screws
2 x M3x6 machine screws (1 at each side)
3 x M3x6 machine screws (along underside)
5. Remove the fascia sub-assembly.
6. Remove subfascia from fascia: 6 x M3x5 Taptite.

● M3 x 5 Taptite



7. Remove Processor/Switch PCB (3 x M3x16 Taptite) being careful not to lose the nylon washers that are underneath the PCB standoffs.
8. Service as necessary.
9. Place nylon washers over correct holes and lower PCBs down onto them and screw up, making sure at all time that the push button falls centrally in the fascia holes.
10. **WARNING:** Take very great care when re-tightening the (M3 x 16 Taptite) screws that attach the front panel PCB to the fascia. If these screws are over-tightened they can locally deform the front surface of the fascia - making small "dimples". It is not possible to repair this defect, so the fascia would have to be scrapped.
11. Slide complete fascia assembly back into chassis.
12. Screw sub-fascia back into chassis.
13. Plug FFC cable back into PL501 and put top cover back on.
14. Give unit a functional test.



TEL 04103 263308	
Title	MA 240 - Micro and switch PCB
Size	1922
Document Number	REV B
Date	JULY 26, 1999
Sheet	3

MA 240 Power Amplifier			MA240 Main Board Parts List		
Drawing Number: 1921			Revision: C		
Bill of Materials			Revised: August 9, 1999		
Item	Qty	Stock No.	Reference	Part Description	Notes
1	2	0CA122250K	C322,C422	2n2F Cer Disc 10% 50V	
2	3	0CA131050Z	C511,C515,C516	10nF Cer Disc Z 50V	
3	5	0CD131070J	C321,C421,C503,C504,C512	10nF PolyE 5% 100V	
4	2	0CD134770J	C320,C420	47nF PolyE 5% 100V	
5	5	0CD141063J	C307,C310,C407,C410,C525	100nF PolyE 5%63V	
6	2	0CE112263J	C302,C402	220pF PolyP 5% 63V	
7	4	0CE114763H	C101,C102,C201,C202	470pF PolyP 2.5% 63V	
8	18	0CE141070J	C252,C253,C303,C306,C314,C316,C317,C318,C319,C403,C406,C414,C416,C417,C418,C419,C522,C523	100nF PolyP 5% 100V	
9	1	0CG144770M	C527	0u47F 100V	
10	5	0CG152270M	C324,C326,C424,C426,C524	2u2F 100V	
11	12	0CG161063M	C256,C257,C304,C305,C312,C313,C315,C404,C405,C412,C413,C415	10uF 63V	
12	2	0CG161073M	C507,C508	10uF 160V	
13	1	0CG162250M	C526	22uF 50V	
14	4	0CG162270M	C323,C325,C423,C425	22uF 100V	
15	4	0CG164725M	C311,C327,C411,C427	47uF 25V	
16	4	0CG171025M	C254,C255,C520,C521	100uF 25V	
17	2	0CG171070M	C505,C506	100uF 100V	
18	5	0CG172260M	C509,C510,C517,C518,C519	220uF 10V	
19	2	0CG272270M	C501,C502	220uF 100V	
20	2	0CG282235M	C513,C514	2200uF 35V	
21	4	0CI111085F	C308,C309,C408,C409	100pF Silver Mica 1% 400V	
22	2	0CN0010001	J102,J202	XL R Socket, female	
23	1	0CN0010011	BP501	Speaker Terminal Block, 4way, Gold	
24	1	0CN0010020	J502	Jack Socket - Dual 3.5mm	
25	3	0CN0010027	J101,J201,J501	Dual Vert. RCA Phono	
26	3	0CN0100001	PL501 crimps	Power Crimp	
27	1	0CN0100033	PL501	3-way Power Connector	
28	1	0CN0110030	SK502	3-way VH Header, top entry	
29	1	0CN0140061	JP501	FFC Socket Top Entry 6-way	
30	4	0DI0000006	D301,D302,D401,D402	1SS244	
31	4	0DI0140040	D501,D502,D513,D514	1N4004	
32	2	0DI0141480	D305,D405	1N4148	
33	4	0DI0154020	D303,D304,D403,D404	1N5402	
34	8	0DI0204004	D503,D504,D505,D506,D507,D508,D509,D510	UF4004	
35	4	0DI1101100	D307,D309,D407,D409	BZX55C10V	
36	2	0DI1101160	D511,D512	BZX55C16V	
37	4	0DI1101330	D306,D308,D406,D408	BZX55C33V	
38	4	0FA0113063		M3x6 CR Pan Machine Screw	
39	4	0FA4003001		M3 Stl Hex Fullnuts Zn/Clr	
40	4	0FA5403004		M3 Crinkle Washer Be/Cu	
41	2	0FU0201000	F501,F502	Fuse T1A GL	
42	2	0FU9000001	Fuseholder for F501,F502	Fuse Holder PCB	
43	4	0HK0010004	HS301,HS302,HS401,HS402	Heatsink 6237 PB	
44	6	0IC0100431	IC251,IC252,IC302,IC303,IC402,IC403	TL431CZ	Shunt regulator
45	1	0IC0100521	IC502	TLP 521-1A	Opto-isolator
46	2	0IC0100604	IC301,IC401	OPA604AP	
47	2	0IC0100627	IC101,IC201	OPA627AP	
48	1	0IC0107317	IC503	TA7317P	
49	1	0IC0107805	IC501	LM7805	5V regulator
50	2	0RE0020330	R347,R447	3R3 - CF 5% 1/2W	Carbon Film
51	4	0RE0023100	R351,R355,R451,R455	1K - CF 5% 1/2W	Carbon Film
52	4	0RE0042100	R346,R446,R501,R502	10R 5% 1W	Flameproof
53	2	0RE0042680	R322,R422	680R 5% 1W	Flameproof
54	2	0RE0043100	R323,R423	100R 5% 1W	Flameproof
55	2	0RE0111270	R524,R525	27R - MF 1%	Metal Film
56	2	0RE0111390	R520,R521	39R - MF 1%	Metal Film
57	4	0RE0111470	R508,R509,R510,R511	47R - MF 1%	Metal Film
58	4	0RE0111680	R312,R314,R412,R414	68R - MF 1%	Metal Film
59	5	0RE0112100	R304,R309,R404,R409,R515	100R - MF 1%	Metal Film

MA 240 Power Amplifier			MA240 Main Board Parts List		
Drawing Number: 1921			Revision: C		
Bill of Materials			Revised: August 9, 1999		
Item	Qty	Stock No.	Reference	Part Description	Notes
60	4	ORE0112330	R306,R307,R406,R407	330R - MF 1%	Metal Film
61	12	ORE0113100	R101,R102,R201,R202,R311, R315,R350,R354,R411,R415, R450,R454	1K - MF 1%	Metal Film
62	5	ORE0113150	R318,R335,R418,R435,R542	1K5 - MF 1%	Metal Film
63	1	ORE0113220	R516	2K2 - MF 1%	Metal Film
64	2	ORE0113300	R317,R417	3K - MF 1%	Metal Film
65	2	ORE0113330	R302,R402	3K3 - MF 1%	Metal Film
66	2	ORE0113390	R253,R255	3K9 - MF 1%	Metal Film
67	2	ORE0113470	R345,R445	4K7 - MF 1%	Metal Film
68	4	ORE0113560	R349,R353,R449,R453	5K6 - MF 1%	Metal Film
69	4	ORE0113680	R505,R517,R518,R519	6K8 - MF 1%	Metal Film
70	11	ORE0114100	R332,R333,R338,R432,R433, R438,R532,R534,R535,R540, R541	10K - MF 1%	Metal Film
71	2	ORE0114220	R252,R254	22K - MF 1%	Metal Film
72	3	ORE0114330	R337,R437,R538	33K - MF 1%	Metal Film
73	4	ORE0114470	R506,R507,R514,R536	47K - MF 1%	Metal Film
74	7	ORE0114560	R356,R357,R358,R456,R457, R458,R539	56K - MF 1%	Metal Film
75	4	ORE0114680	R305,R308,R405,R408	68K - MF 1%	Metal Film
76	2	ORE0114820	R336,R436	82K - MF 1%	Metal Film
77	3	ORE0115100	R342,R442,R533	100K - MF 1%	Metal Film
78	8	ORE0115130	R303,R310,R348,R352,R403, R410,R448,R452	130K - MF 1%	Metal Film
79	1	ORE0115220	R537	220K - MF 1%	Metal Film
80	4	ORE0116100	R343,R344,R443,R444	10M - MF 1%	Metal Film
81	2	ORE0211681	R313,R413	68R1 - MF 0.1% 15ppm	Metal Film
82	8	ORE0214100	R103,R104,R105,R106,R203, R204,R205,R206	10K - MF 0.1% 15ppm	Metal Film
83	2	ORE0214221	R340,R440	22K1 - MF 0.1% 15ppm	Metal Film
84	2	ORE0223220	R339,R439	2K2 - Foil VSRJ 1%	Bulk Foil
85	8	ORE2020022	R328,R329,R330,R331,R428, R429,R430,R431	0R22 5% 3W	
86	8	ORE3010220	R324,R325,R326,R327,R424, R425,R426,R427	2R2 5% 0.25W	Fusible
87	8	ORE3012120	R316,R319,R320,R321,R416, R419,R420,R421	120R 5% 0.25W	Fusible
88	6	ORE3012220	R503,R504,R522,R523,R526, R527	220R 5% 0.25W	Fusible
89	2	ORE9000011	R341,R441	2K2 1W MF 1%	Metal Film
90	2	ORV0012500	RV301,RV401	Pot 500R 5mm	
91	2	ORY0000004	RY301,RY401	Relay - RTD14-024	
92	1	OSE0020090	TH501	Sensor 90°C	
93	1	OSW1950002	SW251	Push Switch DP	
94	2	OTR0000005	Q319,Q419	MPSA42	
95	2	OTR0000006	Q320,Q420	MPSA92	
96	7	OTR0109700	Q301,Q304,Q306,Q401,Q404, Q406,Q510	2SA970-BL	
97	6	OTR0110150	Q501,Q512,Q513,Q515,Q517, Q522	2SA1015T-Y	
98	4	OTR0113020	Q316,Q318,Q416,Q418	2SA1943-O	
99	2	OTR0113060	Q314,Q414	2SA1837	
100	6	OTR0114790	Q307,Q312,Q407,Q412,Q503, Q505	2SA1479	
101	6	OTR0318150	Q502,Q511,Q514,Q516,Q518, Q521	2SC1815T-Y	
102	7	OTR0322400	Q302,Q303,Q305,Q402,Q403, Q405,Q509	2SC2240-BL	
103	4	OTR0332810	Q315,Q317,Q415,Q417	2SC5200-O	
104	4	OTR0332980	Q308,Q313,Q408,Q413	2SC4793	
105	6	OTR0337890	Q310,Q311,Q410,Q411,Q504, Q506	2SC3789	
106	2	OTR1003370	Q309,Q409	BC337-25	
107	2	OWC0010001	L301,L401	Choke 1uH high current	

[illegible]

ALL RESISTOR 1/4W 1% METAL FILM EXCEPT WHERE STATED

