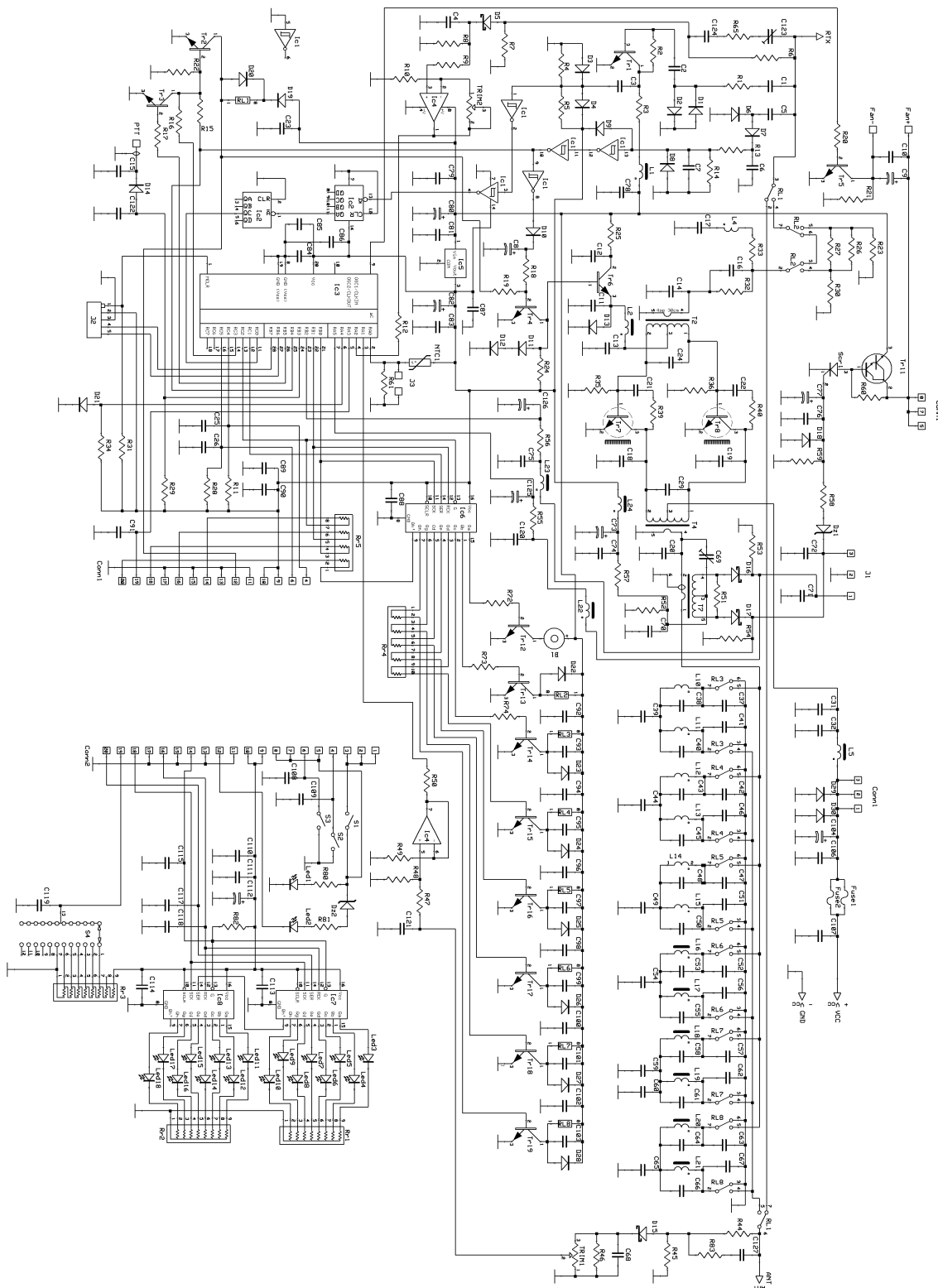


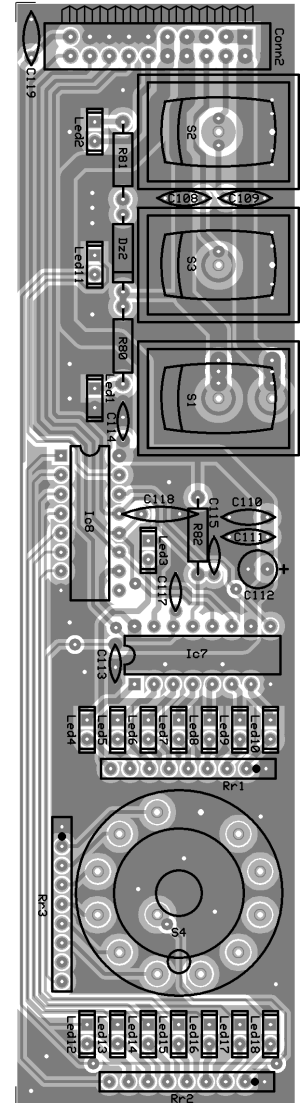
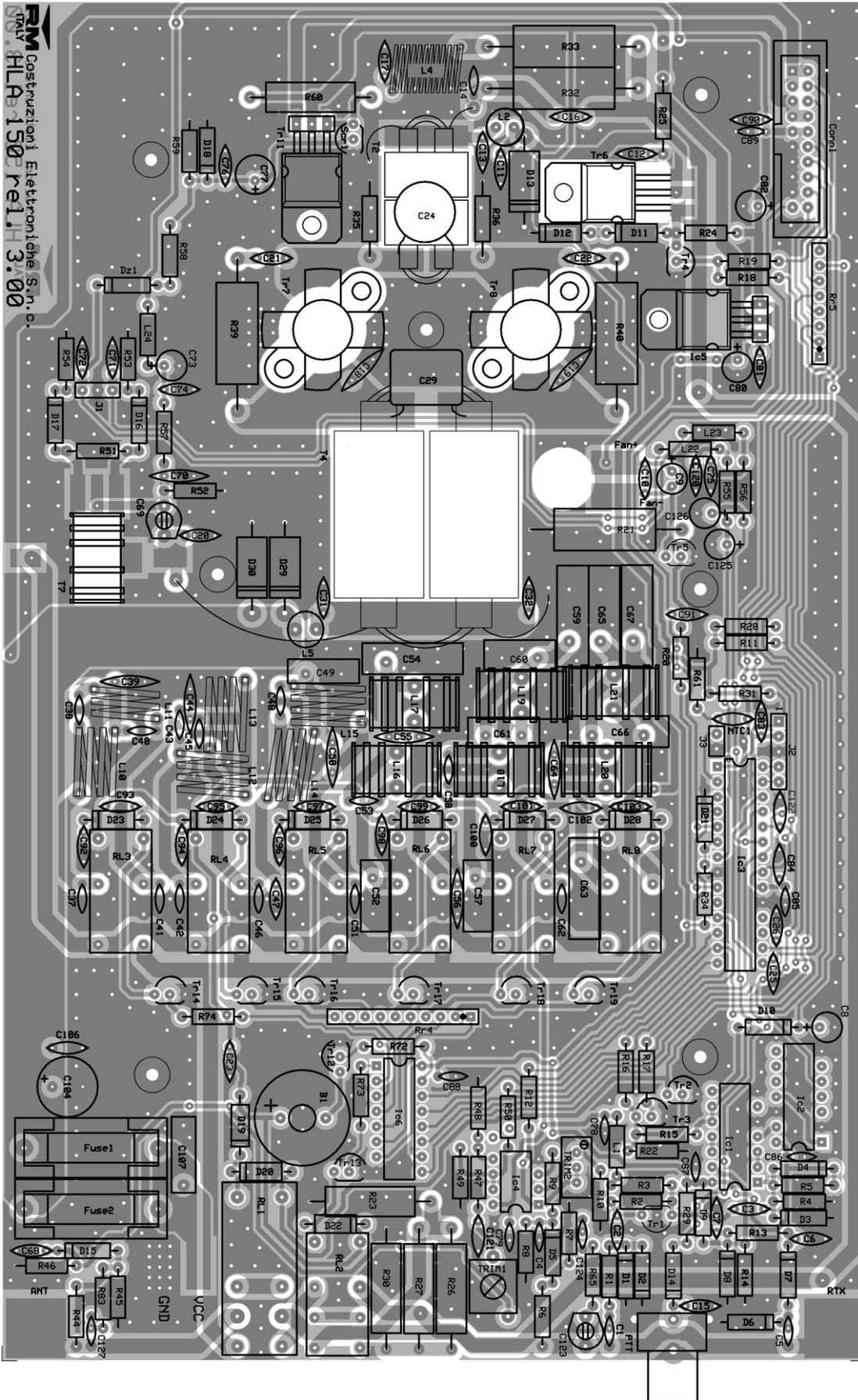


HLA 150 Plus linear amplifier

Schematic diagram

Version 3.00





RM Costruzioni Elettroniche S.n.c.
 ITALY HLA150 rev.1.3.00



List of components

C ₁	= 10 pF	50 V	NP0	C ₆₄	= 270 pF	500 V	N750
C ₂	= 100 nF	50 V		C ₆₅	= 1600 pF	500 V	Silveredmica
C ₃	= 10 nF	50 V		C ₆₆	= 620 pF	500 V	Silveredmica
C ₄	= 1,0 µF	50 V	Multilayer	C ₆₇	= 560 pF	500 V	Silveredmica
C ₅	= 4,7 pF	50 V	NP0	C ₆₈	= 10 nF	50 V	
C ₆	= 100 nF	50 V		C ₆₉	= 3-10 pF	Trimmer	NP0
C ₇	= 10 nF	50 V		C ₇₀	= 470 pF	50 V	NP0
C ₈	= 2,2 µF	25 V		C ₇₁	= 100 nF	50 V	
C ₉	= 22 µF	25 V		C ₇₂	= 100 nF	50 V	
C ₁₀	= 100 nF	50 V		C ₇₃	= 22 µF	25 V	
C ₁₁	= 100 nF	50 V		C ₇₄	= 100 nF	50 V	
C ₁₂	= 100 nF	50 V		C ₇₅	= 100 nF	50 V	
C ₁₃	= 100 nF	50 V		C ₇₆	= 100 nF	50 V	
C ₁₄	= 68 pF	50 V	NP0	C ₇₇	= 47 µF	25 V	
C ₁₅	= 100 nF	50 V		C ₇₈	= 220 nF	50 V	Multilayer
C ₁₆	= 100 pF	500 V	NP0	C ₇₉	= 220 nF	50 V	Multilayer
C ₁₇	= 10 nF	50 V		C ₈₀	= 10 µF	25 V	
C ₁₈	= 220 pF	500 V	N750	C ₈₁	= 100 nF	50 V	
C ₁₉	= 220 pF	500 V	N750	C ₈₂	= 22 µF	25 V	
C ₂₀	= 47 pF	1 KV	NP0	C ₈₃	= 100 nF	50 V	
C ₂₁	= 47 nF	50 V		C ₈₄	= 100 nF	50 V	
C ₂₂	= 47 nF	50 V		C ₈₅	= 220 nF	50 V	Multilayer
C ₂₃	= 100 nF	50 V		C ₈₆	= 220 nF	50 V	Multilayer
C ₂₄	= 2 x 470 pF	50 V	N750	C ₈₇	= 220 nF	50 V	Multilayer
C ₂₅	= 100 nF	50 V		C ₈₈	= 220 nF	50 V	Multilayer
C ₂₆	= 100 nF	50 V		C ₈₉	= 220 nF	50 V	Multilayer
C ₂₉	= 1300 pF	500 V	Silveredmica	C _{90 to C₁₀₃}	= 100 nF	50 V	
C ₃₁	= 100 nF	50 V		C ₁₀₄	= 470 µF	25 V	
C ₃₂	= 100 nF	50 V		C ₁₀₆	= 100 nF	50 V	
C ₃₇	= 47 pF	500 V	NP0	C ₁₀₇	= 470 nF	100 V	Polyester
C ₃₈	= 12 pF	500 V	NP0	C ₁₀₈	= 100 nF	50 V	
C ₃₉	= 150 pF	500 V	NP0	C ₁₀₉	= 100 nF	50 V	
C ₄₀	= 39 pF	500 V	NP0	C ₁₁₀	= 10 nF	50 V	
C ₄₁	= 39 pF	500 V	NP0	C ₁₁₁	= 100 nF	50 V	
C ₄₂	= 82 pF	500 V	NP0	C ₁₁₂	= 22 µF	25 V	
C ₄₃	= 18 pF	500 V	NP0	C ₁₁₃	= 220 nF	50 V	Multilayer
C ₄₄	= 220 pF	500 V	N750	C ₁₁₄	= 220 nF	50 V	Multilayer
C ₄₅	= 39 pF	500 V	NP0	C ₁₁₅	= 1,0 nF	50 V	
C ₄₆	= 68 pF	500 V	NP0	C ₁₁₇	= 1,0 nF	50 V	
C ₄₇	= 100 pF	500 V	NP0	C ₁₁₈	= 470 pF	50 V	N750
C ₄₈	= 56 pF	500 V	NP0	C ₁₁₉	= 100 nF	50 V	
C ₄₉	= 220 pF	500 V	Silveredmica	C ₁₂₀	= 100 nF	50 V	
C ₅₀	= 180 pF	500 V	N750	C ₁₂₁	= 100 nF	50 V	
C ₅₁	= 22 pF	500 V	NP0	C ₁₂₂	= 100 nF	50 V	
C ₅₂	= 390 pF	500 V	Silveredmica	C ₁₂₃	= 1-5 pF	Trimmer	NP0
C ₅₃	= 56 pF	500 V	NP0	C ₁₂₄	= 1,0 pF	50 V	NP0
C ₅₄	= 620 pF	500 V	Silveredmica	C ₁₂₅	= 22 µF	25 V	
C ₅₅	= 180 pF	500 V	N750	C ₁₂₆	= 22 µF	25 V	
C ₅₆	= 180 pF	500 V	N750	C ₁₂₇	= 1,0 pF	50 V	NP0
C ₅₇	= 390 pF	500 V	Silveredmica	R ₁	= 22 KΩ	¼W	
C ₅₈	= 56 pF	500 V	NP0	R ₂	= 47 KΩ	¼W	
C ₅₉	= 560 pF	500 V	Silveredmica	R ₃	= 1,0 KΩ	¼W	
C ₆₀	= 330 pF	500 V	Silveredmica	R ₄	= 100 KΩ	¼W	
C ₆₁	= 390 pF	500 V	Silveredmica	R ₅	= 100 KΩ	¼W	
C ₆₂	= 82 pF	500 V	NP0	R ₆	= 22 KΩ	¼W	
C ₆₃	= 560 pF	500 V	Silveredmica	R ₇	= 8,2 KΩ	¼W	

R 8 = 4,7 K Ω	1/4W	Rr 1 = 8 x 270 Ω	L 10 = ANRA958/2
R 9 = 10 K Ω	1/4W	Rr 2 = 8 x 270 Ω	L 11 = ANRA958/1
R 10 = 10 K Ω	1/4W	Rr 3 = 8 x 470 Ω	L 12 = ANRA958/4
R 11 = 4,7 K Ω	1/4W	Rr 4 = 5 x 4,7 K Ω	L 13 = ANRA958/3
R 12 = 1,0 K Ω	1/4W	Rr 5 = 4 x 47 Ω	L 14 = ANRA958
R 13 = 10 K Ω	1/4W	NTC 1 = 4,7 K Ω \varnothing 5mm	L 15 = ANRA958/3
R 14 = 1,0 M Ω	1/4W	Trim 1 = Timmer PT10 220 K Ω	L 16 = ANRA 700/6
R 15 = 4,7 K Ω	1/4W	Trim 2 = Timmer 10 K Ω Multi	L 17 = ANRA 700/5
R 16 = 4,7 K Ω	1/4W	D 1 - D 4 = 1N4148	L 18 = ANRA 700/7
R 17 = 4,7 K Ω	1/4W	D 5 = 1N5711	L 19 = ANRA 700/6
R 18 = 10 K Ω	1/4W	D 6 - D 10 = 1N4148	L 20 = ANRA 700/10
R 19 = 10 K Ω	1/4W	D 11 = 1N4007	L 21 = ANRA 700/9
R 20 = 1,0 K Ω	1/4W	D 12 = 1N4007	L 22 = 10 μ H
R 21 = 33 Ω	5W	D 13 = 1N5400	L 23 = 10 μ H
R 22 = 10 K Ω	1/4W	D 14 = 1N4148	L 24 = 10 μ H
R 23 = 330 Ω	2W	D 15 - D 17 = 1N5711	B 1 = Buzzer 12V ARIMB12A12
R 24 = 680 Ω	1/4W	D 18 = 1N4148	S 1 - S 3 = Int A12131900
R 25 = 1,0 Ω	1/2W	D 19 = 1N4007	S 4 = Switch 1 way 7 positions
R 26 = 39 Ω	2W	D 20 = 1N4007	
R 27 = 39 Ω	2W	D 21 = not present	
R 28 = 4,7 K Ω	1/4W	D 22 - D 28 = 1N4007	
R 29 = 4,7 K Ω	1/4W	D 29 = 1N5402	
R 30 = 330 Ω	2W	D 30 = 1N5402	
R 31 = 4,7 K Ω	1/4W	Dz 1 = Zener 5,1 V 1/2W	
R 32 = 47 Ω	5W	Dz 2 = Zener 5,1 V 1/2W	
R 33 = 68 Ω	5W	Led 1 = Green	
R 34 = 4,7 K Ω	1/4W	Led 2 = Red	
R 35 = 10 Ω	1/2W	Led 3 = Red	
R 36 = 10 Ω	1/2W	Led 4 - Led 10 = Green	
R 39 = 68 Ω	5W	Led 11 = Yellow	
R 40 = 68 Ω	5W	Led 12 - Led 17 = Green	
R 44 = 100 K Ω	1/4W	Led 18 = Yellow	
R 45 = 12 K Ω	1/4W	Tr 1 = BF 199	
R 46 = 47 K Ω	1/4W	Tr 2 - Tr 4 = BC 547 B	
R 47 = 10 K Ω	1/4W	Tr 5 = BC 337-25	
R 48 = 8,2 K Ω	1/4W	Tr 6 = BD 241 BFP	
R 49 = 10 K Ω	1/4W	Tr 7 - Tr 8 = SD 1446	
R 50 = 1,0 K Ω	1/4W	Tr 11 = BDX 53 BFP	
R 51 = 47 Ω	1/4W	Tr 12 - Tr 19 = BC 547 B	
R 52 = 1,0 K Ω	1/4W	Scr 1 = P0102	
R 53 = 22 K Ω	1/4W	Ic 1 = 74HC14	
R 54 = 22 K Ω	1/4W	Ic 2 = 74HC393	
R 55 = 2,2 K Ω	1/4W	Ic 3 = PIC 18F2420	
R 56 = 2,2 K Ω	1/4W	Ic 4 = LM 358	
R 57 = 22 K Ω	1/4W	Ic 5 = LM 7805	
R 58 = 470 Ω	1/4W	Ic 6 - Ic 8 = 74HC595	
R 59 = 10 K Ω	1/4W	Rl 1 = 4152.9.012	
R 60 = 330 Ω	2W	Rl 2 - Rl 8 = 3022.7.012	
R 61 = 4,7 K Ω	1/4W	Fuse 1 = 12 A Fast	
R 65 = 6,8 K Ω	1/4W	Fuse 2 = 12 A Fast	
R 72 = 4,7 K Ω	1/4W	T 2 = Input Transformer	
R 73 = 4,7 K Ω	1/4W	T 4 = Output Transformer	
R 74 = 4,7 K Ω	1/4W	T 7 = ANRA 700/12	
R 80 = 1,0 K Ω	1/4W	L 1 = 10 μ H	
R 81 = 1,0 K Ω	1/4W	L 2 = FH002100	
R 82 = 4,7 K Ω	1/4W	L 4 = ANRA883	
R 83 = 1,0 K Ω	1/4W	L 5 = FH002110	