



# RM Costruzioni Elettroniche

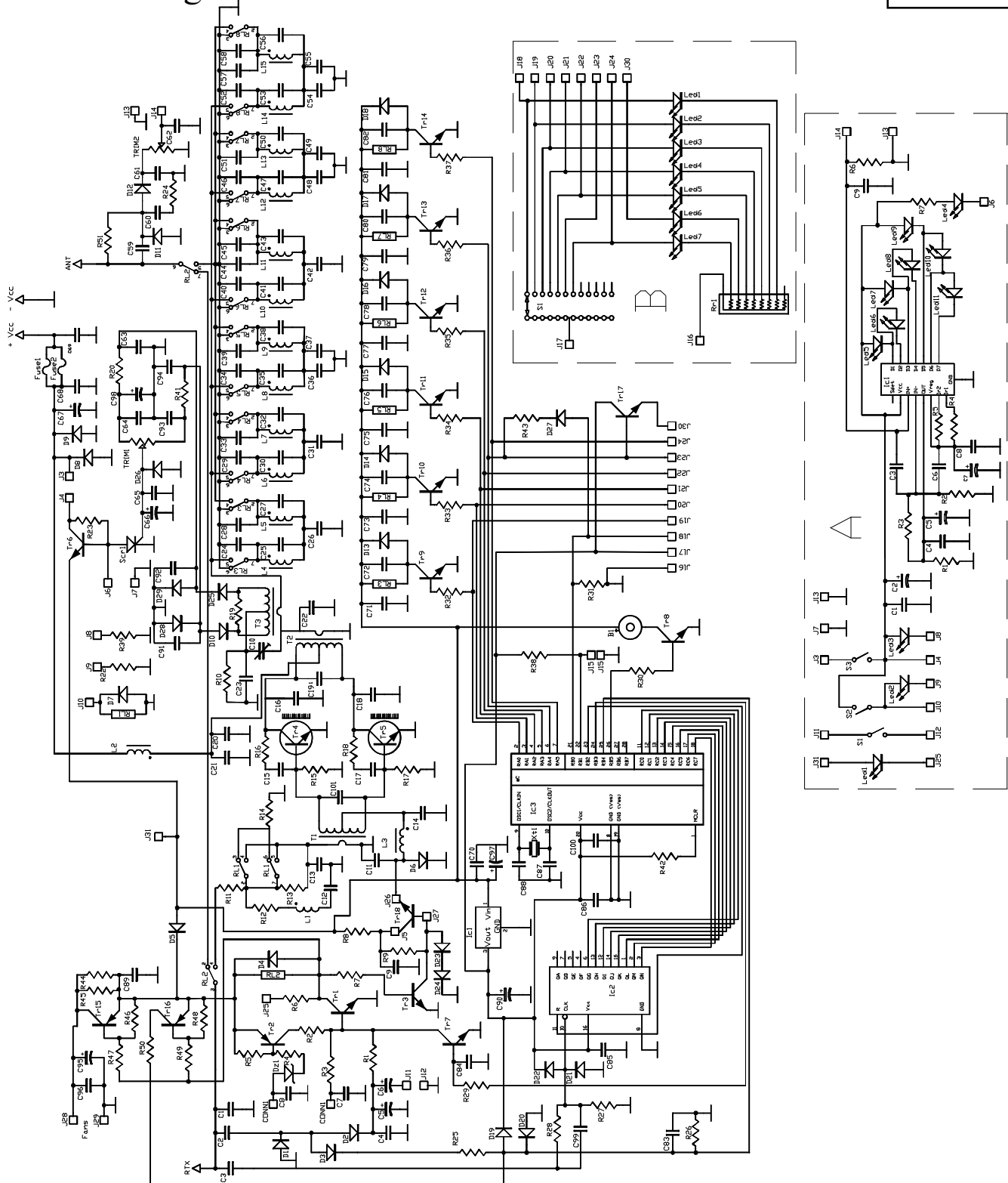
di Marchioni Davide & Daniele s.n.c.

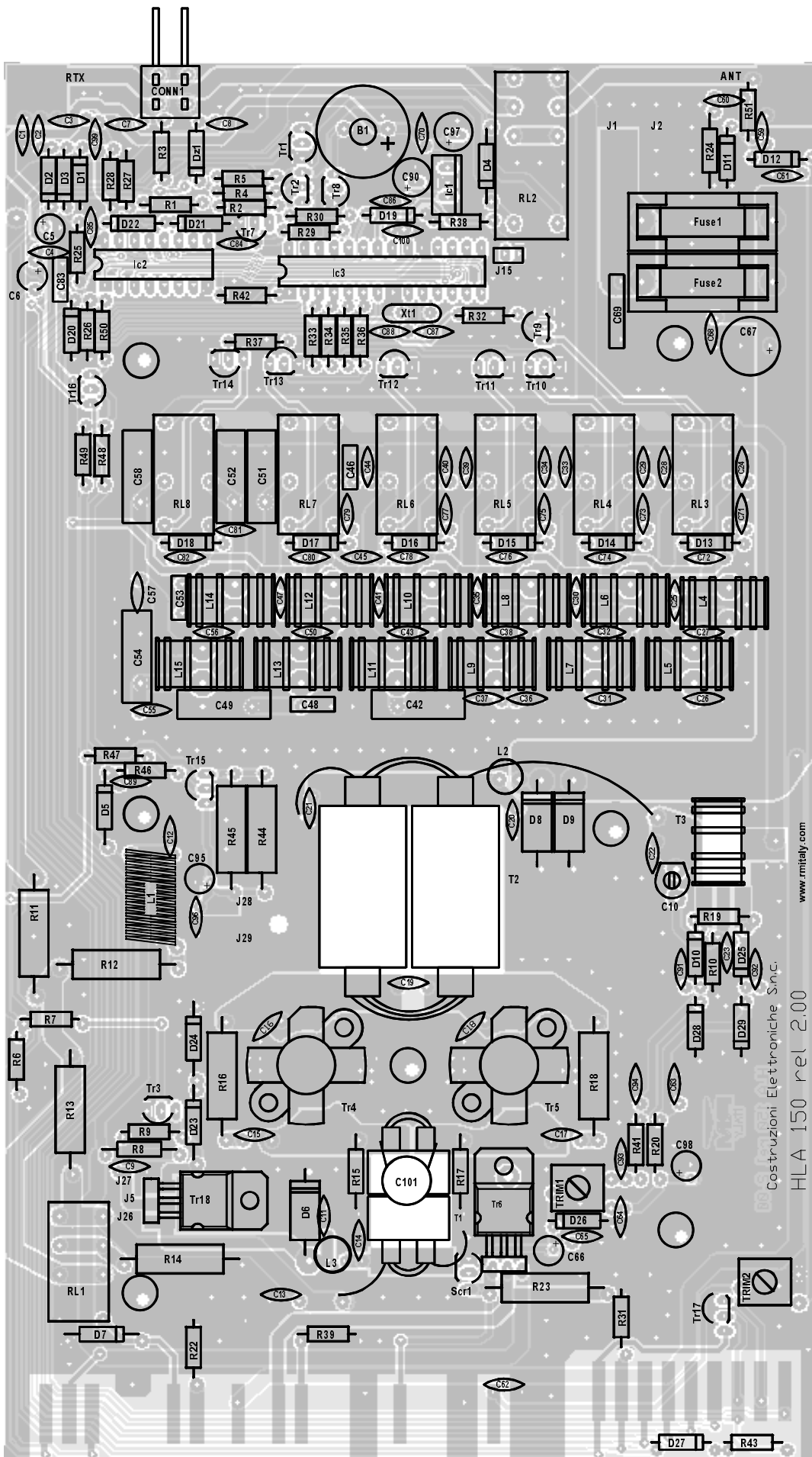
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## Mod. HLA 150 linear amplifier

Schematic diagram

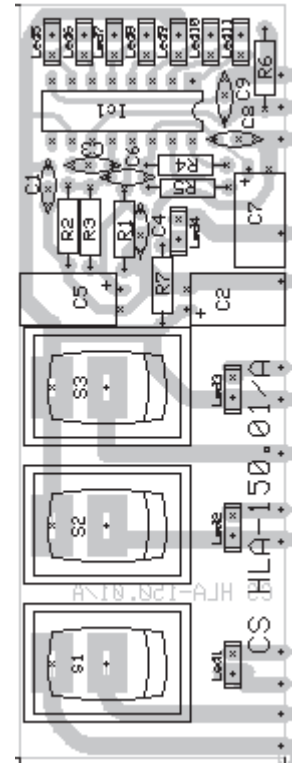
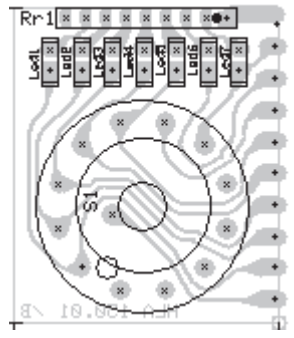
Version 2.00





Costruzioni Elettroniche S.n.c.  
HLA 150 rel 2.00

www.rmtaly.com



## List of components

C <sub>1</sub>	=				
C <sub>2</sub>	= 8,2 pF	50 V	NP0		
C <sub>3</sub>	= 15 pF	50 V	NP0		
C <sub>4</sub>	= 100 nF	50 V			
C <sub>5</sub>	= 2,2 μF	16 V			
C <sub>6</sub>	= 33 μF	16 V			
C <sub>7</sub>	= 10 nF	50 V			
C <sub>8</sub>	= 10 nF	50 V			
C <sub>9</sub>	= 100 nF	50 V			
C <sub>10</sub>	= 3 - 10 pF	Trimmer	50 V	NP0	
C <sub>11</sub>	= 100 nF	50 V			
C <sub>12</sub>	= 10 nF	50 V			
C <sub>13</sub>	= 150 pF	50 V	NP0		
C <sub>14</sub>	= 100 nF	50 V			
C <sub>15</sub>	= 47 nF	50 V			
C <sub>16</sub>	= 220 pF	500 V	NP0		
C <sub>17</sub>	= 47 nF	50 V			
C <sub>18</sub>	= 220 pF	500 V	NP0		
C <sub>19</sub>	= 620 + 390 pF	500 V	silvered mica		
C <sub>20</sub>	= 100 nF	50 V			
C <sub>21</sub>	= 100 nF	50 V			
C <sub>22</sub>	= 47 pF	1 KV	NP0		
C <sub>23</sub>	= 470 pF	50 V	N750		
C <sub>24</sub>	= 22 pF	500 V	NP0		
C <sub>25</sub>	= 33 pF	500 V	NP0		
C <sub>26</sub>	= 150 pF	500 V	NP0		
C <sub>27</sub>	= 12 pF	500 V	NP0		
C <sub>28</sub>	= 100 pF	500 V	NP0		
C <sub>29</sub>	= 47 pF	500 V	NP0		
C <sub>30</sub>	= 33 pF	500 V	NP0		
C <sub>31</sub>	= 220 pF	500 V	NP0		
C <sub>32</sub>	= 15 pF	500 V	NP0		
C <sub>33</sub>	= 100 pF	500 V	NP0		
C <sub>34</sub>	= 82 pF	500 V	NP0		
C <sub>35</sub>	= 82 pF	500 V	NP0		
C <sub>36</sub>	= 100 pF	500 V	NP0		
C <sub>37</sub>	= 220 pF	500 V	NP0		
C <sub>38</sub>	= 56 pF	500 V	NP0		
C <sub>39</sub>	= 150 pF	500 V	NP0		
C <sub>40</sub>	= 220 pF	500 V	NP0		
C <sub>41</sub>	= 100 pF	500 V	NP0		
C <sub>42</sub>	= 620 pF	500 V	Silvered mica		
C <sub>43</sub>	= 33 pF	500 V	NP0		
C <sub>44</sub>	= 220 pF	500 V	NP0		
C <sub>45</sub>	= 100 pF	500 V	NP0		
C <sub>46</sub>	= 390 pF	500 V	Silvered mica		
C <sub>47</sub>	= 150 pF	500 V	NP0		
C <sub>48</sub>	= 390 pF	500 V	Silvered mica		
C <sub>49</sub>	= 620 pF	500 V	Silvered mica		
C <sub>50</sub>	= 82 pF	500 V	NP0		
C <sub>51</sub>	= 620 pF	500 V	Silvered mica		
C <sub>52</sub>	= 620 pF	500 V	Silvered mica		
C <sub>53</sub>	= 390 pF	500 V	Silvered mica		
C <sub>54</sub>	= 1600 pF	500 V	Silvered mica		
C <sub>55</sub>	= 270 pF	500 V	NP0		
C <sub>56</sub>	= 150 pF	500 V	NP0		
C <sub>57</sub>	= 150 pF	500 V	NP0		
C <sub>58</sub>	= 620 pF	500 V	Silvered mica		
C <sub>59</sub>	= 2,2 pF	50 V	NP0		
C <sub>60</sub>	= 33 pF	50 V	NP0		
C <sub>61</sub>	= 100 nF	50 V			
C <sub>62</sub>	= 10 nF	50 V			
C <sub>63</sub>	= 100 nF	50 V			
C <sub>64</sub>	= 100 nF	50 V			
C <sub>65</sub>	= 100 nF	50 V			
C <sub>66</sub>	= 10 μF	25 V			
C <sub>67</sub>	= 470 μF	25 V			
C <sub>68</sub>	= 100 nF	50 V			
C <sub>69</sub>	= 470 nF	63 V		Polyester	
C <sub>70 to C<sub>82</sub></sub>	= 100 nF	50 V			
C <sub>83</sub>	= 10 nF	50 V			
C <sub>84</sub>	= 10 nF	63 V		Polyester	
C <sub>85</sub>	= 100 nF	50 V			
C <sub>86</sub>	= 100 nF	50 V			
C <sub>87</sub>	= 27 pF	50 V		NP0	
C <sub>88</sub>	= 27 pF	50 V		NP0	
C <sub>89</sub>	= 100 nF	50 V			
C <sub>90</sub>	= 22 μF	25 V			
C <sub>91</sub>	= 100 nF	50 V			
C <sub>92</sub>	= 100 nF	50 V			
C <sub>93</sub>	= 100 nF	50 V			
C <sub>94</sub>	= 100 nF	50 V			
C <sub>95</sub>	= 22 μF	25 V			
C <sub>96</sub>	= 100 nF	50 V			
C <sub>97</sub>	= 10 μF	25 V			
C <sub>98</sub>	= 33 μF	16 V			
C <sub>99</sub>	= 4,7 pF	50 V		NP0	
C <sub>100</sub>	= 220 nF	50 V		Multilayer	
C <sub>101</sub>	= 2 x 470 pF	50 V		N750	
R <sub>1</sub>	= 2,2 KΩ	¼W			
R <sub>2</sub>	= 4,7 KΩ	¼W			
R <sub>3</sub>	= 4,7 KΩ	¼W			
R <sub>4</sub>	= 10 KΩ	¼W			
R <sub>5</sub>	= 2,2 KΩ	¼W			
R <sub>6</sub>	= 1,0 KΩ	¼W			
R <sub>7</sub>	= 2,2 KΩ	¼W			
R <sub>8</sub>	= 1,0 Ω	½W			
R <sub>9</sub>	= 1,2 KΩ	¼W			
R <sub>10</sub>	= 1,0 KΩ	¼W			
R <sub>11</sub>	= 33 Ω	5W			
R <sub>12</sub>	= 33 Ω	5W			
R <sub>13</sub>	= 39Ω	2W			
R <sub>14</sub>	= 150 Ω	2W			
R <sub>15</sub>	= 10 Ω	½W			
R <sub>16</sub>	= 68 Ω	5W			
R <sub>17</sub>	= 10 Ω	½W			
R <sub>18</sub>	= 68 Ω	5W			
R <sub>19</sub>	= 47 Ω	¼W			
R <sub>20</sub>	= 1,0 KΩ	¼W			
R <sub>22</sub>	= 1,0 KΩ	¼W			
R <sub>23</sub>	= 390 Ω	2W			
R <sub>24</sub>	= 27 Ω	½W			

R<sub>25</sub> = 56 K $\Omega$  1/4W  
 R<sub>26</sub> = 1,0 M $\Omega$  1/4W  
 R<sub>27</sub> = 47 K $\Omega$  1/4W  
 R<sub>28</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>29</sub> = 1,0 K $\Omega$  1/4W  
 R<sub>30</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>31</sub> = 10 K $\Omega$  1/4W  
 R<sub>32</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>33</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>34</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>35</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>36</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>37</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>38</sub> = 4,7 K $\Omega$  1/4W  
 R<sub>39</sub> = 1,0 K $\Omega$  1/4W  
 R<sub>41</sub> = 10 K $\Omega$  1/4W  
 R<sub>42</sub> = 1,0 K $\Omega$  1/4W  
 R<sub>43</sub> = 220  $\Omega$  1/4W  
 R<sub>44</sub> = 68  $\Omega$  2W  
 R<sub>45</sub> = 68  $\Omega$  2W  
 R<sub>46</sub> = 470  $\Omega$  1/4W  
 R<sub>47</sub> = 2,2 K $\Omega$  1/4W  
 R<sub>48</sub> =  
 R<sub>49</sub> =  
 R<sub>50</sub> =

R<sub>51</sub> = 10 K $\Omega$  1/4W

B<sub>1</sub> = Buzzer 12V ARIMB12A12

Trim<sub>1</sub> = Timmer PT10 10 K $\Omega$

Trim<sub>2</sub> = Timmer PT10 10 K $\Omega$

D<sub>1</sub> = 1N4148

D<sub>2</sub> = 1N4148

D<sub>3</sub> = 1N4148

D<sub>4</sub> = 1N4007

D<sub>5</sub> = 1N4007

D<sub>6</sub> = 1N5400

D<sub>7</sub> = 1N4007

D<sub>8</sub> = 1N5400

D<sub>9</sub> = 1N5400

D<sub>10</sub> - D<sub>22</sub> = 1N4148

D<sub>23</sub> = 1N4007

D<sub>24</sub> = 1N4007

D<sub>25</sub> - D<sub>29</sub> = 1N4148

Dz<sub>1</sub> = Zener 7,5 V 1/2W

Fuse<sub>1</sub> = 12 A Fast

Fuse<sub>2</sub> = 12 A Fast

Ic<sub>1</sub> = LM 7805

Ic<sub>2</sub> = 74HC4020

Ic<sub>3</sub> = Micro RM2

Tr<sub>1</sub> = BC 547 B

Tr<sub>2</sub> = BC 557 B

Tr<sub>3</sub> = BC 547 B

Tr<sub>4</sub> - Tr<sub>5</sub> = SD 1446

Tr<sub>6</sub> = BD 241

Tr<sub>7</sub> - Tr<sub>14</sub> = BC 547 B

Tr<sub>15</sub> = BC 327

Tr<sub>16</sub> =

Tr<sub>17</sub> = BC 547 B

Tr<sub>18</sub> = BD 241 BFP

Xt<sub>1</sub> = Xtal 11.059 MHz

Scr<sub>1</sub> = P0102

Rl<sub>1</sub> = 3022

Rl<sub>2</sub> = 4152

Rl<sub>3</sub> - Rl<sub>8</sub> = 3022

T<sub>1</sub> = Input Transformer

T<sub>2</sub> = Output Transformer

T<sub>3</sub> = ANRA 700/12

L<sub>1</sub> = ANRA 455

L<sub>2</sub> = FH002110

L<sub>3</sub> = FH002100

L<sub>4</sub> = ANRA 700

L<sub>5</sub> = ANRA 700/1

L<sub>6</sub> = ANRA 700/1

L<sub>7</sub> = ANRA 700/2

L<sub>8</sub> = ANRA 700/2

L<sub>9</sub> = ANRA 700/3

L<sub>10</sub> = ANRA 700/5

L<sub>11</sub> = ANRA 700/6

L<sub>12</sub> = ANRA 700/7

L<sub>13</sub> = ANRA 700/8

L<sub>14</sub> = ANRA 700/9

L<sub>15</sub> = ANRA 700/10

Conn<sub>1</sub> = CQQ/A2/6,3

#### Board A

C<sub>1</sub> = 10 nF 50 V

C<sub>2</sub> = 10  $\mu$ F 16 V

C<sub>3</sub> = 10 nF 50 V

C<sub>4</sub> = 10 nF 50 V

C<sub>5</sub> = 4,7  $\mu$ F 16 V

C<sub>6</sub> = 10 nF 50 V

C<sub>7</sub> = 10  $\mu$ F 16 V

C<sub>8</sub> = 10 nF 50 V

C<sub>9</sub> = 10 nF 50 V

R<sub>1</sub> = 1,0 K $\Omega$  1/4W

R<sub>2</sub> = 1,0 K $\Omega$  1/4W

R<sub>3</sub> = 1,0 K $\Omega$  1/4W

R<sub>4</sub> = 10 K $\Omega$  1/4W

R<sub>5</sub> = 22 K $\Omega$  1/4W

R<sub>6</sub> = 470  $\Omega$  1/4W

R<sub>7</sub> = 1,0 K $\Omega$  1/4W

Ic<sub>1</sub> = KA2288

Led<sub>1</sub> - Led<sub>11</sub> = LED

#### Boar B

S<sub>1</sub> = Switch 1 way 7 positions

Rr<sub>1</sub> = Resistor networks 7 x 220  $\Omega$

Led<sub>1</sub> - Led<sub>7</sub> = LED