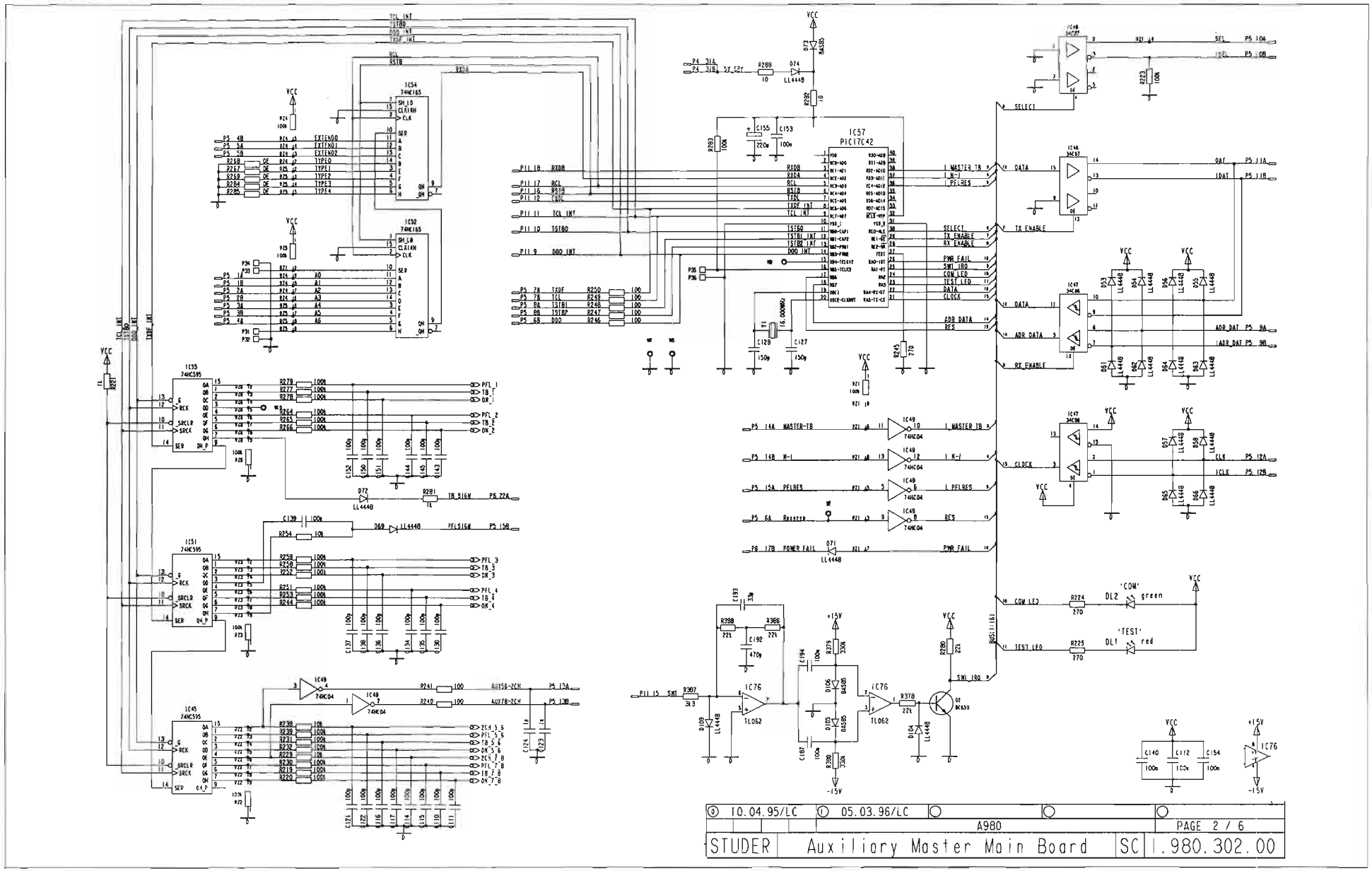
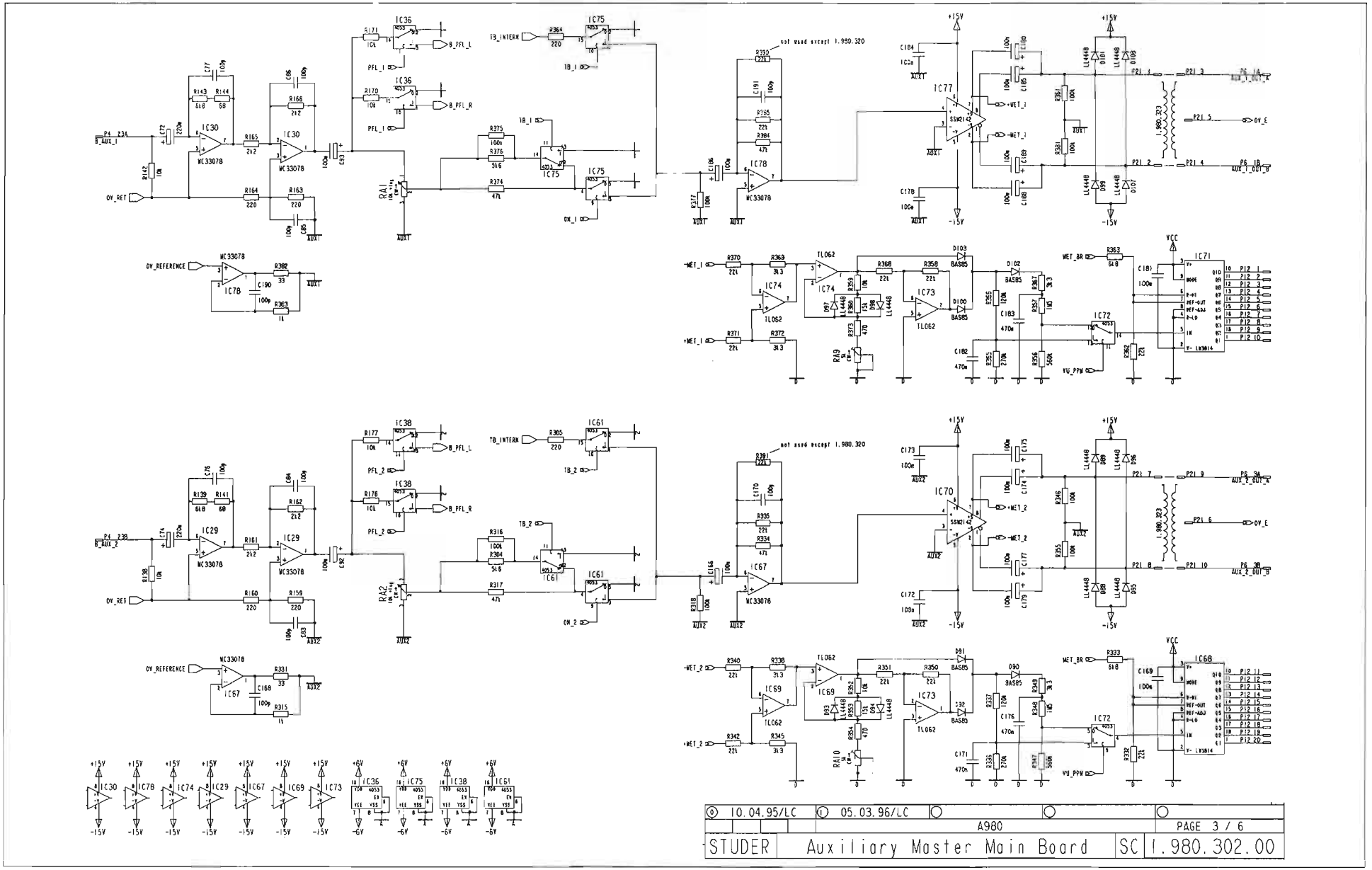
## AUX MASTER MAIN BOARD 1.980.302.00

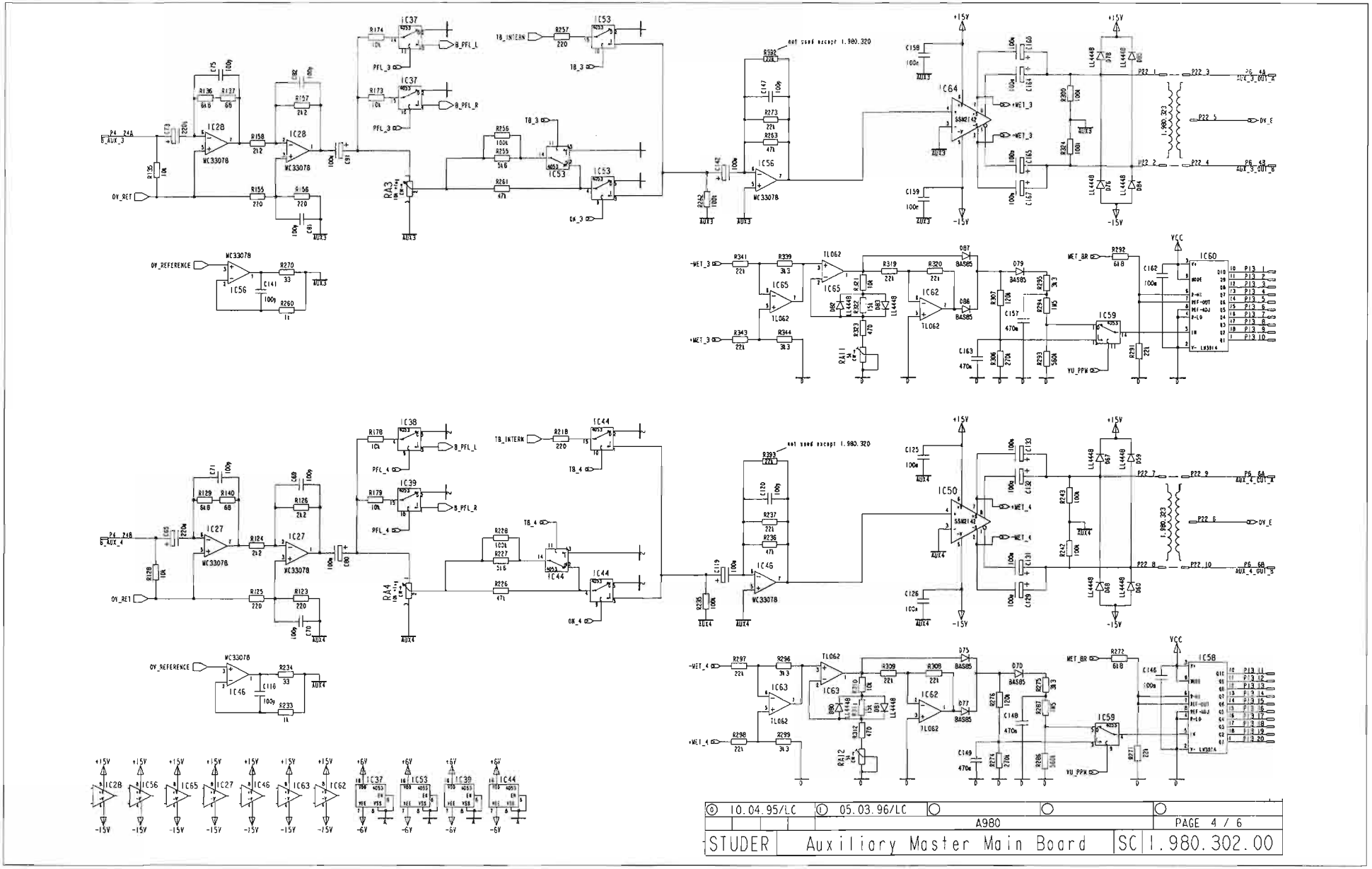


## AUX MASTER MAIN BOARD 1.980.302.00

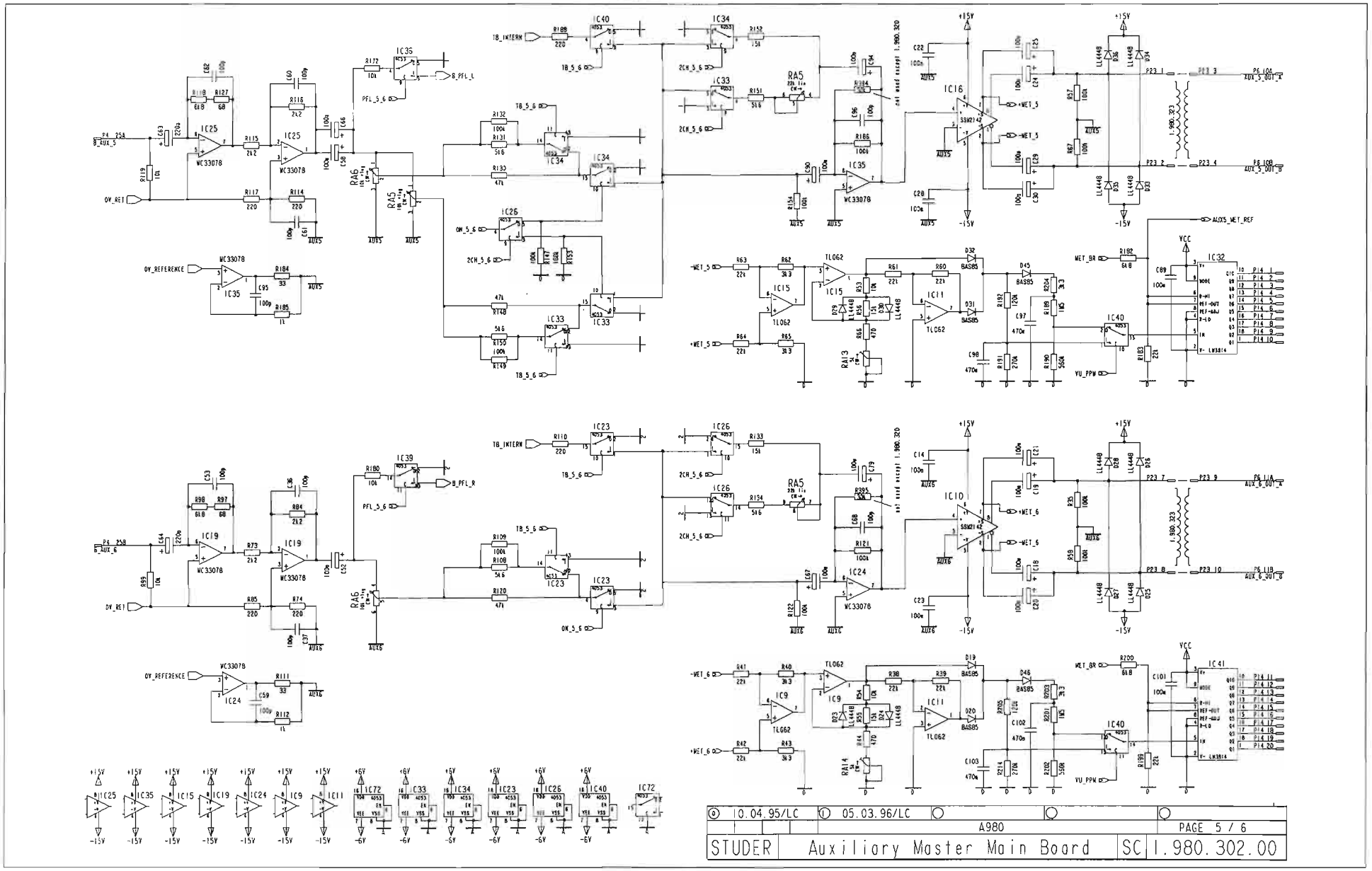



| | | | |
|---|---|---|---|
| ⑤ 10.04.95/LC | ① 05.03.96/LC | | |
| | A980 | | PAGE 3 / 6 |
| STUDER | Auxiliary Master Main Board | SC | 1.980.302.00 |

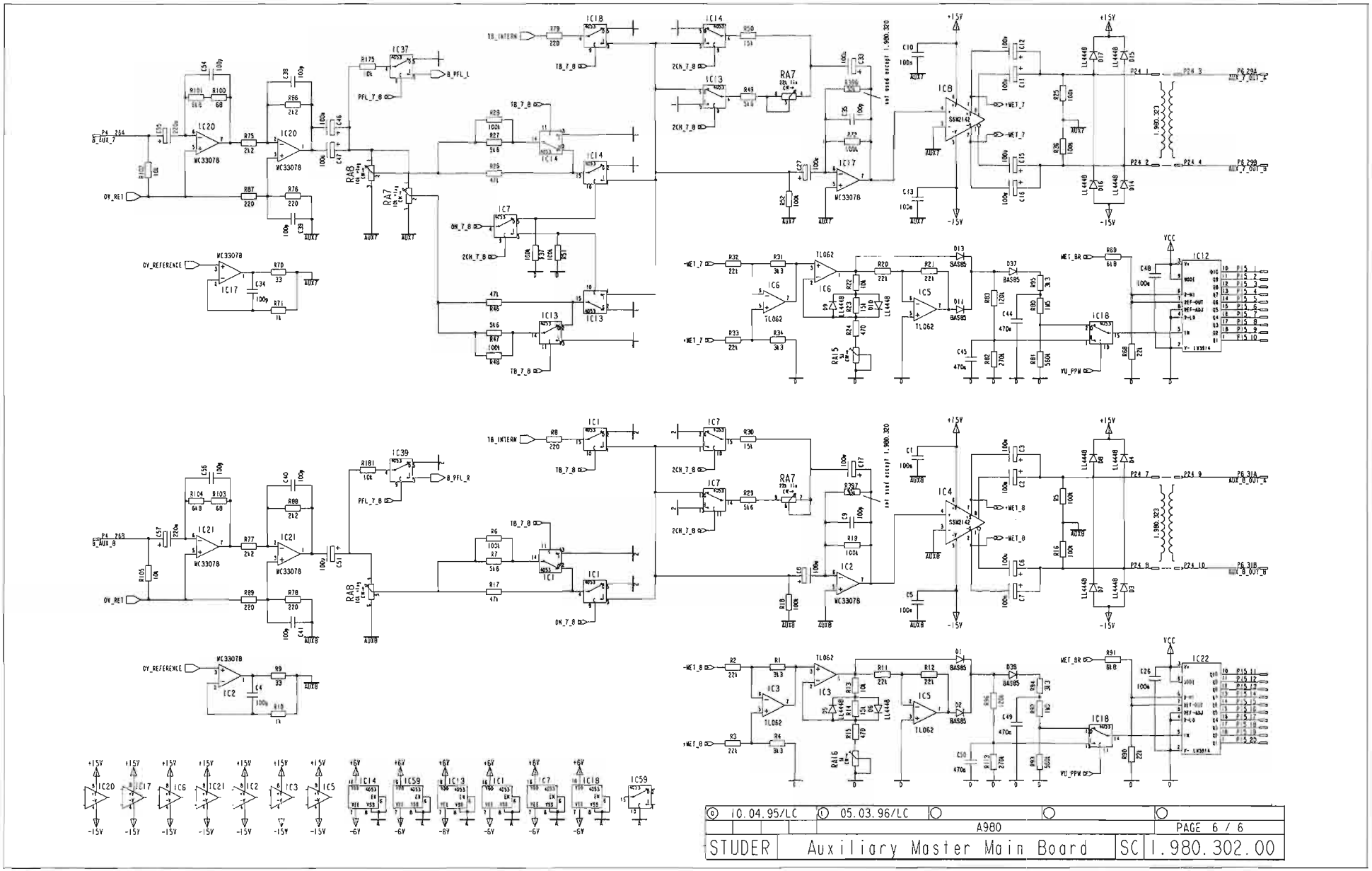
## AUX MASTER MAIN BOARD 1.980.302.00



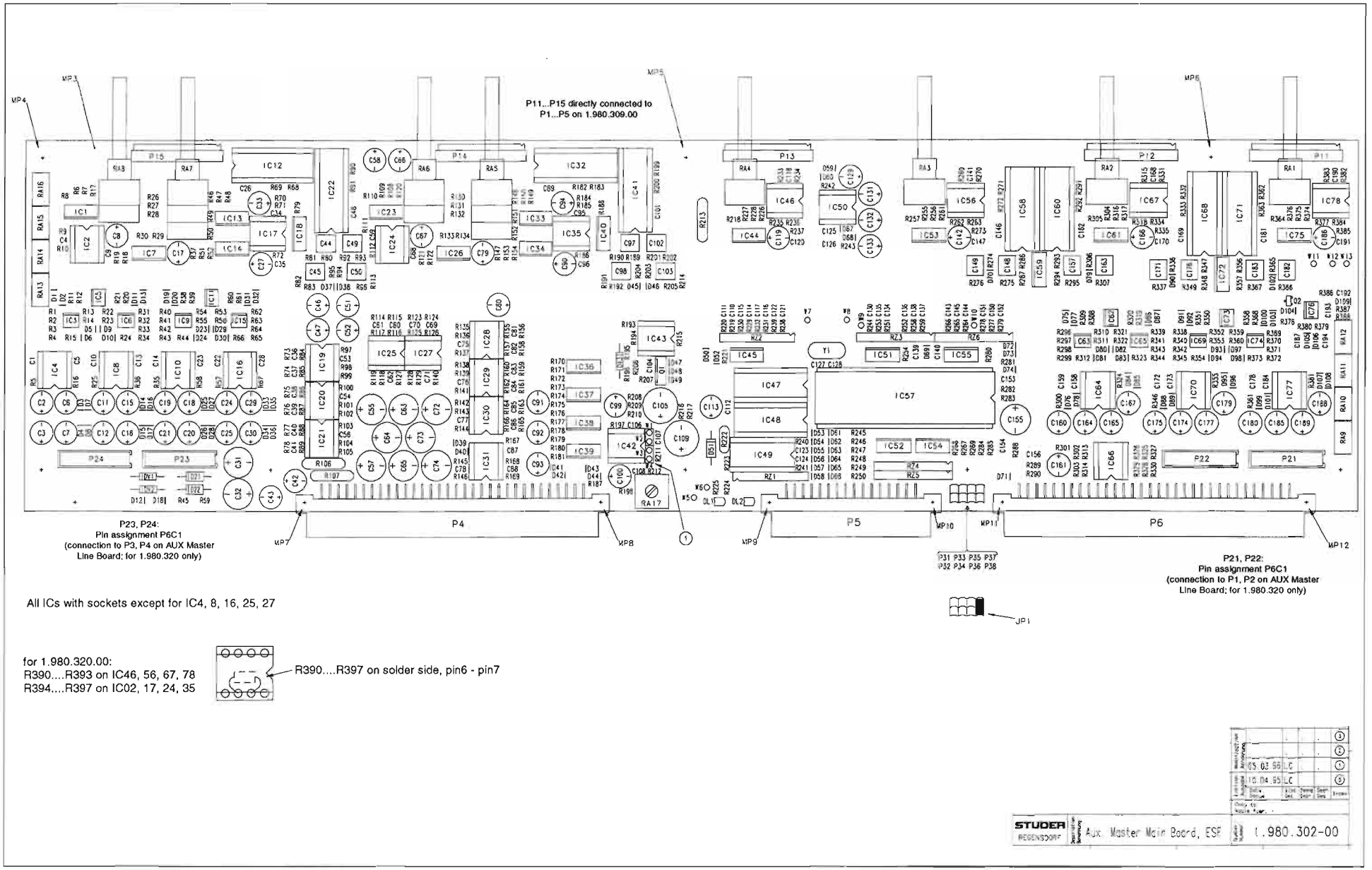
## AUX MASTER MAIN BOARD 1.980.302.00



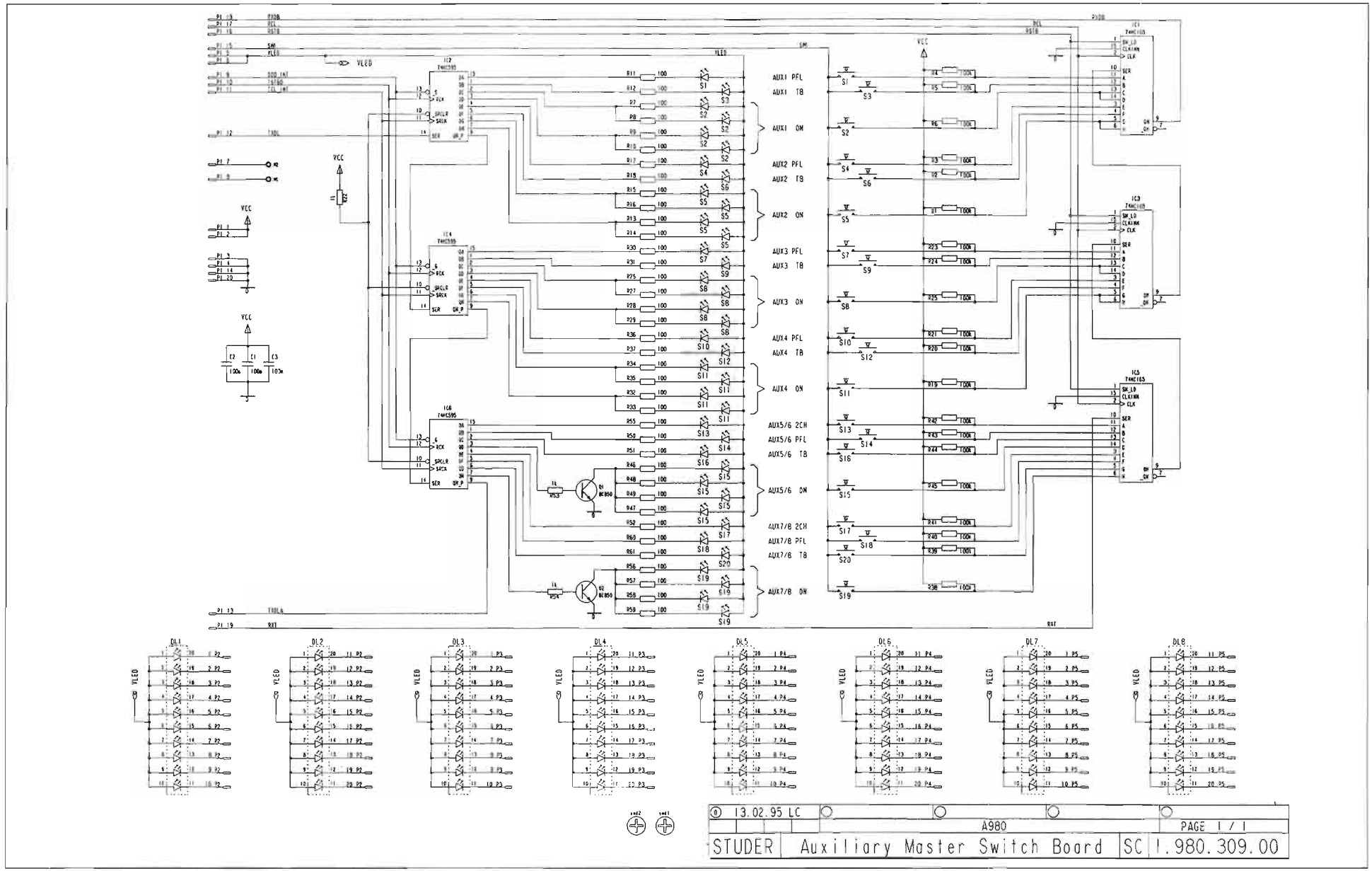
## AUX MASTER MAIN BOARD 1.980.302.00



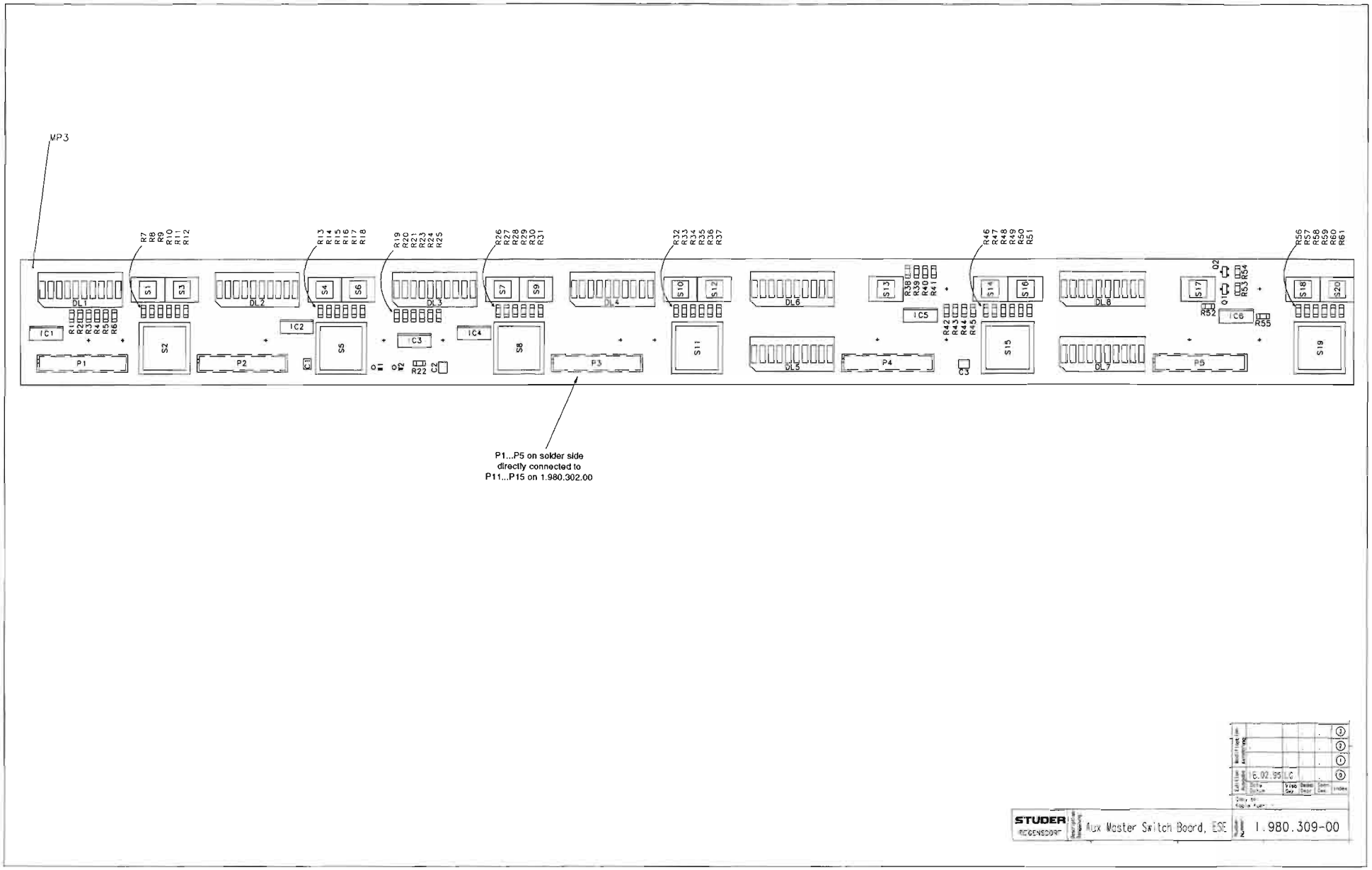
## AUX MASTER MAIN BOARD 1.980.302.00



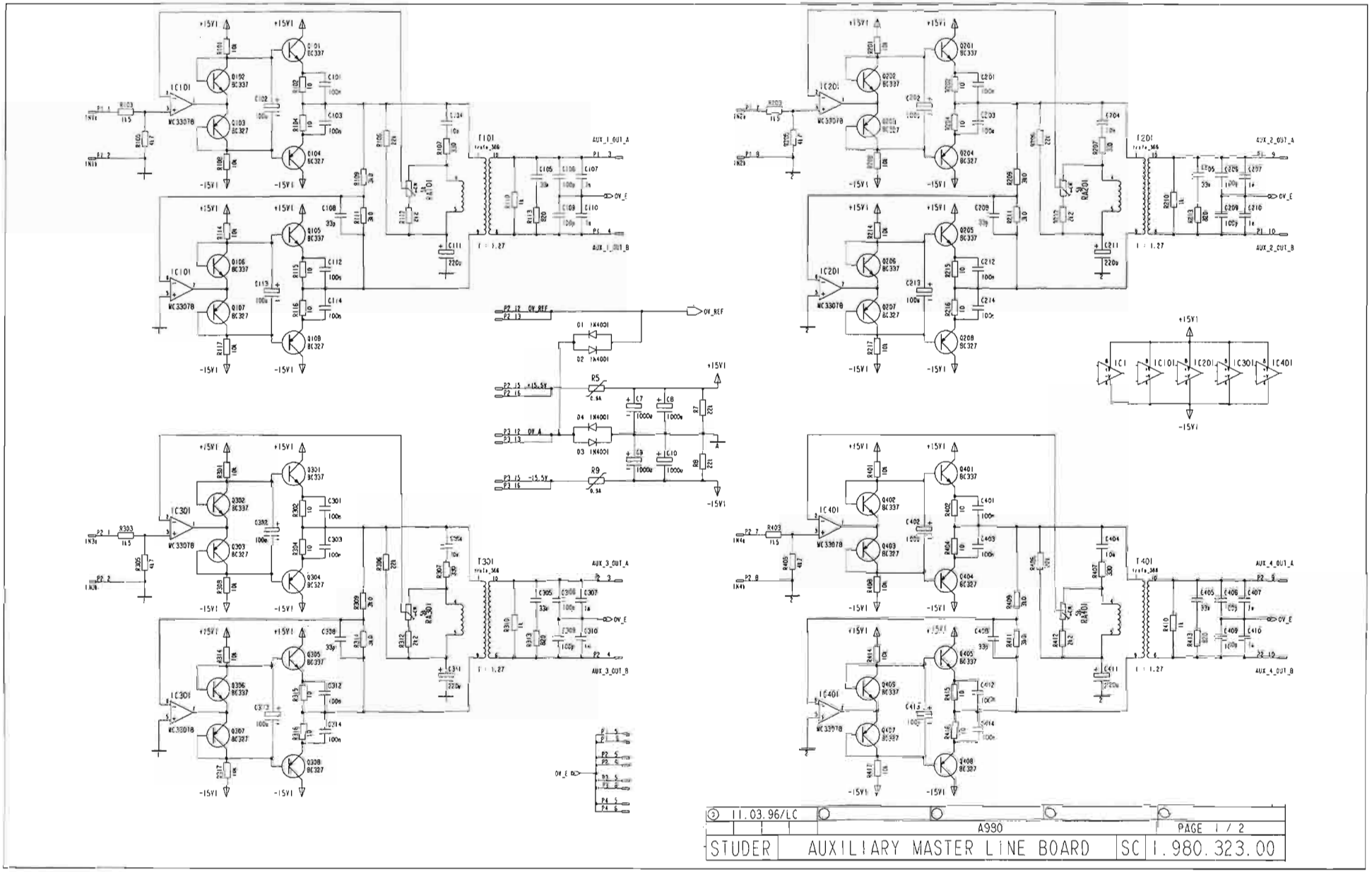
## AUX MASTER SWITCH BOARD 1.980.309.00



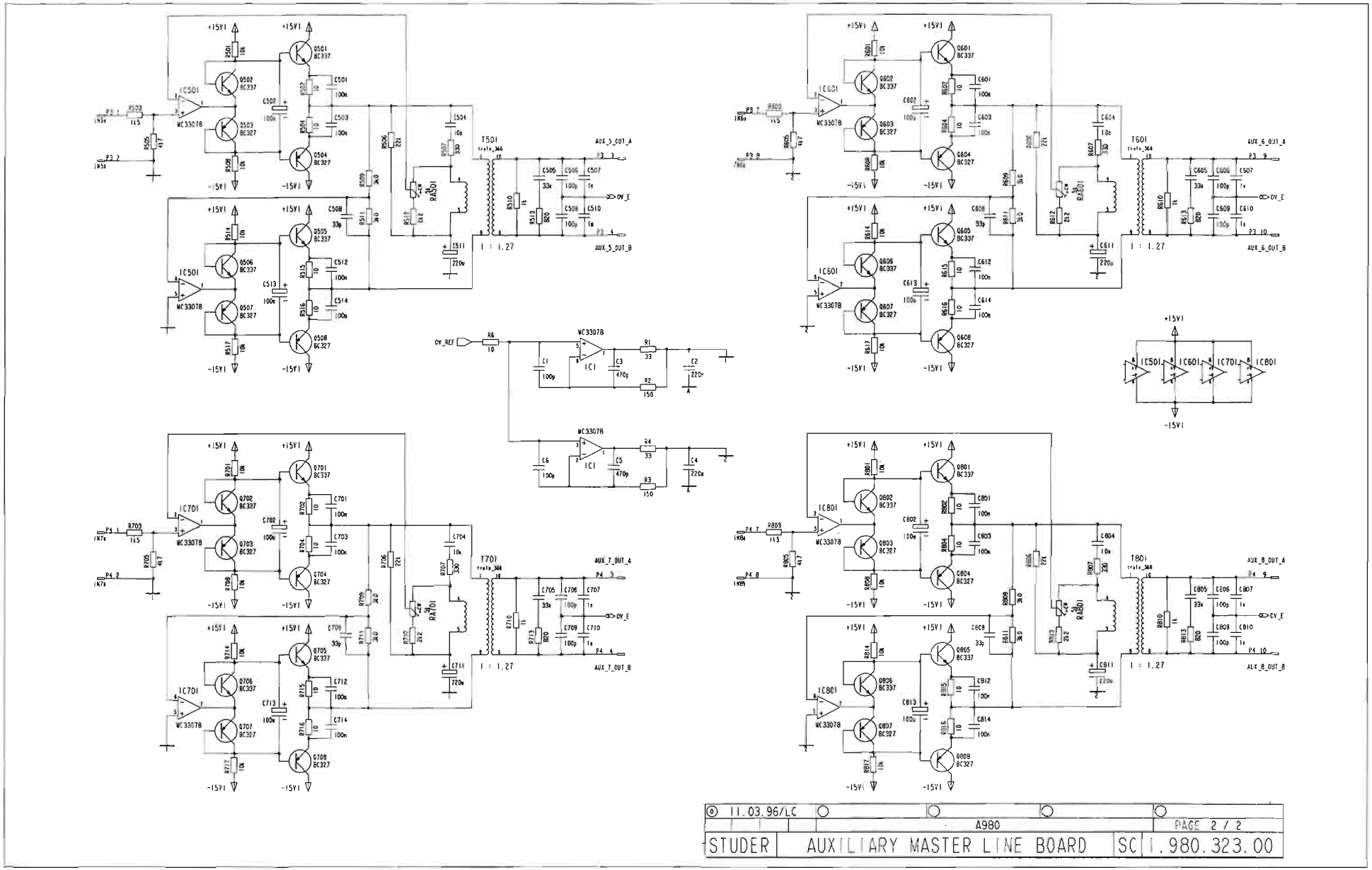
## AUX MASTER SWITCH BOARD 1.980.309.00



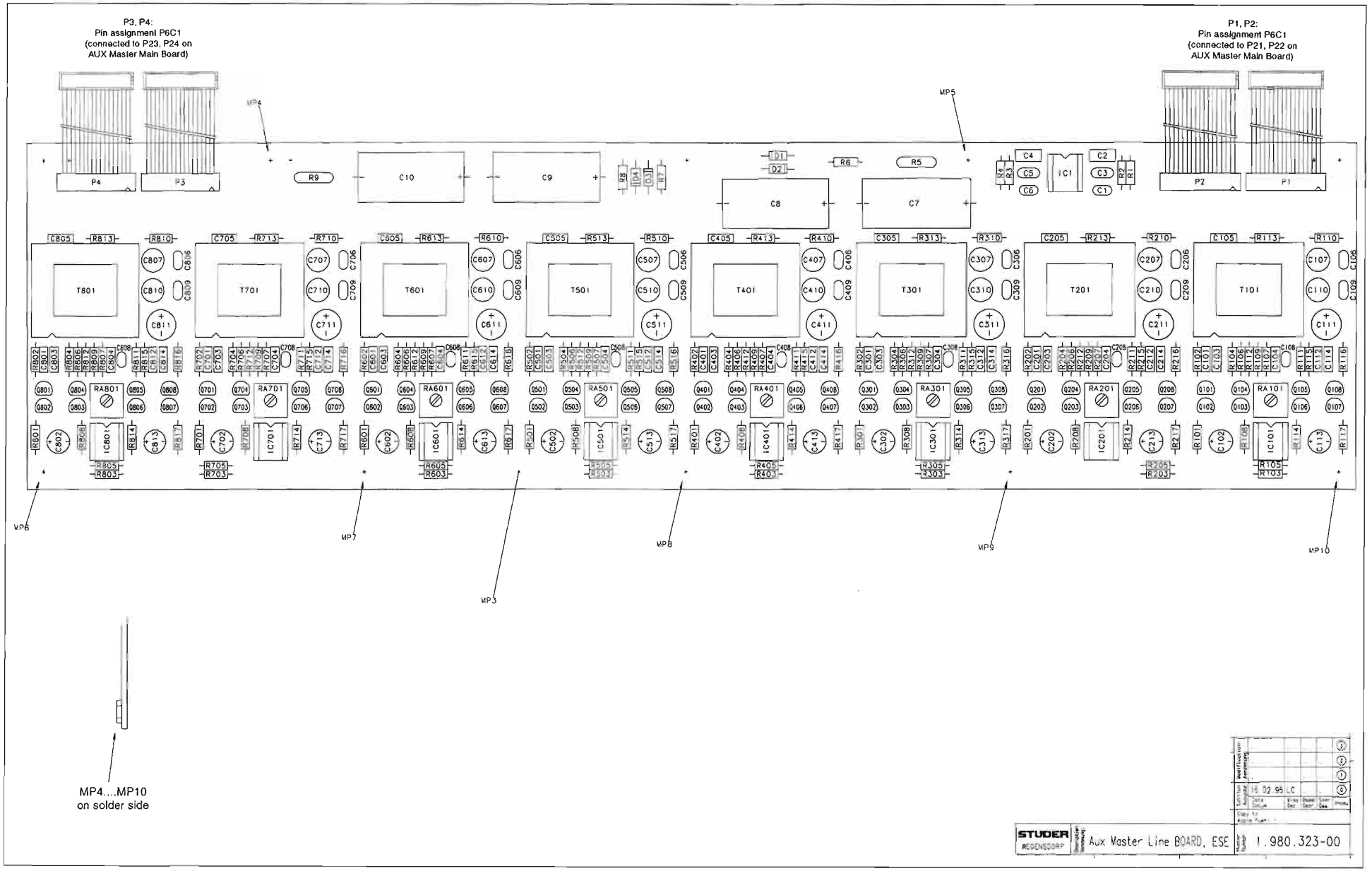
## AUX MASTER LINE BOARD 1.980.323.00



## AUX MASTER LINE BOARD 1.980.323.00



## AUX MASTER LINE BOARD 1.980.323.00



## AUX MASTER MAIN BOARD 1.980.302.00



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 2 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 3 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 4 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 5 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 6 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 7 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 8 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 9 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 10 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 11 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 12 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 13 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 14 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 15 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 16 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 17 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 18 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 19 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 20 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 21 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 22 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 23 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 24 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 25 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 26 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 27 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 28 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 29 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 30 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 31 | 59.22.5101 | | 100u | EL 25V, 20%, rad RM5 |
| 0 | C 32 | 59.22.5101 | | 100u | EL 25V, 20%, rad RM5 |
| 0 | C 33 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 34 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 35 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 36 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 37 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 38 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 39 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 40 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 41 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 42 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 43 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 44 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 45 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 46 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 47 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 48 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 49 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 50 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 51 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 52 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 53 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 54 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 55 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 56 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 57 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 58 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 59 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 60 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 61 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 62 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 63 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 64 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 65 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 66 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 67 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 68 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 69 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 70 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 71 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 72 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 73 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 74 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 75 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 76 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 77 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 78 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 79 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 80 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 81 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 82 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 83 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 84 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 85 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 86 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 87 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 88 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 89 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 90 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 91 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 92 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 93 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 94 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 95 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 96 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 97 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 98 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 99 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 100 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 101 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 102 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 103 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 104 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 105 | 59.22.2102 | | 1m | EL 6.3V, 20%, rad RM5 |
| 0 | C 106 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 107 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 108 | 59.60.0220 | | 22p | C 22 P , 5%, COG , CER |
| 0 | C 109 | 59.22.2102 | | 1m | EL 6.3V, 20%, rad RM5 |
| 0 | C 110 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 111 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 112 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 113 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 114 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 115 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 116 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 117 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 118 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 119 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 120 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 121 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 122 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 123 | 59.60.0102 | | 1n | C 1000 P , 5%, COG , CER |
| 0 | C 124 | 59.60.0102 | | 1n | C 1000 P , 5%, COG , CER |
| 0 | C 125 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 126 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 127 | 59.60.0151 | | 150p | C 150 P , 5%, COG , CER |
| 0 | C 128 | 59.60.0151 | | 150p | C 150 P , 5%, COG , CER |
| 0 | C 129 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 130 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 131 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 132 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 133 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 134 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 135 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 136 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 137 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 138 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 139 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 140 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 141 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 142 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 143 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 144 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 145 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 146 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 147 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 148 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 149 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 150 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 151 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 152 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 153 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 154 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 155 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 156 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 157 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 158 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 159 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 160 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 161 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 162 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 163 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 164 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |

## AUX MASTER MAIN BOARD 1.980.302.00

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 165 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 166 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 167 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 168 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 169 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 170 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 171 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 172 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 173 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 174 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 175 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 176 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 177 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 178 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 179 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 180 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 181 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 182 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 183 | 59.60.1474 | | 470n | C 470 N , 10%, X7R , CER |
| 0 | C 184 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 185 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 186 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 187 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 188 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 189 | 59.22.3101 | | 100u | EL 10V, 20%, rad RM5 |
| 0 | C 190 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 191 | 59.60.0101 | | 100p | C 100 P , 5%, COG , CER |
| 0 | C 192 | 59.60.0471 | | 470p | C 470 P , 5%, COG , CER |
| 0 | C 193 | 59.60.0330 | | 33p | C 33 P , 5%, COG , CER |
| 0 | C 194 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | D 1 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 2 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 3 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 4 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 5 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 6 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 7 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 8 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 9 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 10 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 11 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 12 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 13 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 14 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 15 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 16 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 17 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 18 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 19 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 20 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 21 | 50.04.0122 | | 1N4001 | D 1 N 4001 ... 1 N 4004 |
| 0 | D 22 | 50.04.0122 | | 1N4001 | D 1 N 4001 ... 1 N 4004 |
| 0 | D 23 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 24 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 25 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 26 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 27 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 28 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 29 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 30 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 31 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 32 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 33 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 34 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 35 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 36 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 37 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 38 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 39 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 40 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 41 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 42 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 43 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 44 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 45 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 46 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 47 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 48 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 49 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 50 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 51 | 50.04.0122 | | 1N4001 | D 1 N 4001 ... 1 N 4004 |
| 0 | D 52 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 53 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 54 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 55 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 56 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 57 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 58 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 59 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 60 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 61 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 62 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 63 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 64 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 65 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 66 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 67 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 68 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 69 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 70 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 71 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 72 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 73 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 74 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 75 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 76 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 77 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 78 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 79 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 80 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 81 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 82 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 83 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 84 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 85 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 86 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 87 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 88 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 89 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 90 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 91 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 92 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 93 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 94 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 95 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 96 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 97 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 98 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 99 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 100 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 101 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 102 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 103 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 104 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 105 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 106 | 50.60.8101 | | BAS85 | D BAS 85 SOD 80 |
| 0 | D 107 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 108 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | D 109 | 50.60.8001 | | 4448 | D LL 4448 SOD 80 |
| 0 | DL 1 | 50.04.2121 | | TLUR 2401 | DL TLUR 2401 RT MATT |
| 0 | DL 2 | 50.04.2132 | | TLUG 2401 | DL TLUG 2401 GN MATT |
| 0 | DV 1 | 50.04.1112 | | 5V1 | Zener, 5%, 0.5W, DO-35 |
| 0 | DV 2 | 50.04.1112 | | 5V1 | Zener, 5%, 0.5W, DO-35 |
| 0 | DV 3 | 50.04.1117 | | 12V | Zener, 5%, 0.5W, DO-35 |
| 0 | IC 1 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 , ,A |
| 0 | IC 2 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 3 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 4 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 5 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 6 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 7 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 , ,A |
| 0 | IC 8 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 9 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 10 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 11 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 12 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 13 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 , ,A |
| 0 | IC 14 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 , ,A |
| 0 | IC 15 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |



## AUX MASTER MAIN BOARD 1.980.302.00

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | IC 16 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 17 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 18 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 19 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 20 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 21 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 22 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 23 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 24 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 25 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 26 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 27 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 28 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 29 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 30 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 31 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 32 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 33 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 34 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 35 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 36 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 37 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 38 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 39 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 40 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 41 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 42 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 43 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 44 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 45 | 50.62.1595 | | 74HC595 | IC .. 74 HC 595 . ,A |
| 0 | IC 46 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 47 | 50.15.0128 | | 34C86 | IC DS 34 C 86 TN, MC34C86P ,A |
| 0 | IC 48 | 50.15.0127 | | 34C87 | IC DS 34 C 87 TN, MC34C87P ,A |
| 0 | IC 49 | 50.17.1004 | | 74HC04 | IC ... 74 HC 04 ., ,A |
| 0 | IC 50 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 51 | 50.62.1595 | | 74HC595 | IC .. 74 HC 595 . ,A |
| 0 | IC 52 | 50.62.1165 | | 74HC165 | IC .. 74 HC 165 . ,A |
| 0 | IC 53 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 54 | 50.62.1165 | | 74HC165 | IC .. 74 HC 165 . ,A |
| 0 | IC 55 | 50.62.1595 | | 74HC595 | IC .. 74 HC 595 . ,A |
| 0 | IC 56 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 58 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 59 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 60 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 61 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 62 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 63 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 64 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 65 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 66 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 67 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 68 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 69 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 70 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 71 | 50.11.0119 | | LM4094 | IC LM 3914 N, |
| 0 | IC 72 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 73 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 74 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 75 | 50.62.8053 | | HC4053 | IC .. 74 HC 4053 . ,A |
| 0 | IC 76 | 50.61.0201 | | TL062 | IC TL 062 ACD ,A |
| 0 | IC 77 | 50.09.0124 | | 2142 | IC SSM 2142 P |
| 0 | IC 78 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | JP 1 | 54.01.0021 | | Jumper | 0.63 * 0.63mm |
| 0 | MP 1 | 1.980.302.04 | pce | | NR.-ETIKETTE 5 * 20 |
| 0 | MP 2 | 43.01.0108 | pce | Label | ESE-WARNSCHILD |
| 0 | MP 3 | 1.980.302.12 | pce | | AUXILIARY MASTER MAIN PCB /I\ |
| 0 | P 4 | 54.11.2004 | | 64-P | P EU-B 2 * 32 |
| 0 | P 5 | 54.11.2013 | | 32-P | P EU-BK 2 * 16 |
| 0 | P 6 | 54.11.2004 | | 64-P | P EU-B 2 * 32 |
| 0 | P 11 | 54.14.5540 | | 20-P | J PCB-BUCHSE WINKEL 20 P |
| 0 | P 12 | 54.14.5540 | | 20-P | J PCB-BUCHSE WINKEL 20 P |
| 0 | P 13 | 54.14.5540 | | 20-P | J PCB-BUCHSE WINKEL 20 P |
| 0 | P 14 | 54.14.5540 | | 20-P | J PCB-BUCHSE WINKEL 20 P |
| 0 | P 15 | 54.14.5540 | | 20-P | J PCB-BUCHSE WINKEL 20 P |
| 0 | P 21 | 54.14.5516 | | 16-P | J PCB-BUCHSE GERADE 16 P |
| 0 | P 22 | 54.14.5516 | | 16-P | J PCB-BUCHSE GERADE 16 P |
| 0 | P 23 | 54.14.5516 | | 16-P | J PCB-BUCHSE GERADE 16 P |
| 0 | P 24 | 54.14.5516 | | 16-P | J PCB-BUCHSE GERADE 16 P |
| 0 | P 31 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | P 32 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | P 33 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | P 34 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | P 35 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | P 36 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | P 37 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | P 38 | 54.01.0020 | | 1-P | P STIFT .63*.63, H=5.8/3.4 |
| 0 | Q 1 | 50.03.0452 | | BD140-10 | BD 140-10 |
| 0 | Q 2 | 50.60.0002 | | BC850C | Q BC 850 C, SOT 23 |
| 0 | R 1 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 2 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 3 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 4 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 5 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 6 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 7 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 8 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 9 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 10 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 11 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 12 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 13 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 14 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 1 | R 15 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 16 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 17 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 18 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 19 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 20 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 21 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 22 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 23 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 1 | R 24 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 25 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 26 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 27 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 28 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 29 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 30 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 0 | R 31 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 32 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 33 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 34 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 35 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 36 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 37 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 38 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 39 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 40 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 41 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 42 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 43 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 1 | R 44 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 45 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 46 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 47 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 48 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 49 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 50 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 0 | R 51 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 52 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 53 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 54 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 55 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 0 | R 56 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 0 | R 57 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 58 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 59 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 60 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 61 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 62 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 63 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 64 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 65 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 1 | R 66 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 67 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 68 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 69 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 70 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 71 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |

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| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | R 72 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 73 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 74 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 75 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 76 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 77 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 78 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 79 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 80 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 81 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 82 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 83 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 84 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 85 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 86 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 87 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 88 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 89 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 90 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 91 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 92 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 93 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 94 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 95 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 96 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 97 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 98 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 99 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 100 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 101 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 102 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 103 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 104 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 105 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 106 | 57.92.7015 | | 1.1A | RT 1.1 A ,POLY- PTC |
| 0 | R 107 | 57.92.7015 | | 1.1A | RT 1.1 A ,POLY- PTC |
| 0 | R 108 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 109 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 110 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 111 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 112 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 113 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 114 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 115 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 116 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 117 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 118 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 119 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 120 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 121 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 122 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 123 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 124 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 125 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 126 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 127 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 128 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 129 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 130 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 131 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 132 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 133 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 0 | R 134 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 135 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 136 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 137 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 138 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 139 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 140 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 141 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 142 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 143 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 144 | 57.60.1680 | | 68R | MF, 1%, 0204, E24 |
| 0 | R 145 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 146 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 147 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 148 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 149 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 150 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 151 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 152 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 0 | R 153 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 154 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 155 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 156 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 157 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 158 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 159 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 160 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 161 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 162 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 163 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 164 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 165 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 166 | 57.60.1222 | | 2K2 | MF, 1%, 0204, E24 |
| 0 | R 167 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 168 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 169 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 170 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 171 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 172 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 173 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 174 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 175 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 176 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 177 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 178 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 179 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 180 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 181 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 182 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 183 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 184 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 185 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 186 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 187 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 188 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 189 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 190 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 191 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 192 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 193 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 194 | 57.60.1393 | | 39K | MF, 1%, 0204, E24 |
| 0 | R 195 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 196 | 57.60.1823 | | 82K | MF, 1%, 0204, E24 |
| 0 | R 197 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 198 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 199 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 200 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 201 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 202 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 203 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 204 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 205 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 206 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 207 | 57.60.1479 | | 4R7 | MF, 2%, 0204, E24 |
| 0 | R 208 | 57.60.1123 | | 12K | MF, 1%, 0204, E24 |
| 0 | R 209 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 210 | 57.60.1683 | | 68K | MF, 1%, 0204, E24 |
| 0 | R 211 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 212 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 213 | 57.92.7015 | | 1.1A | RT 1.1 A ,POLY- PTC |
| 0 | R 214 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 215 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 216 | 57.60.1150 | | 15R | MF, 1%, 0204, E24 |
| 0 | R 217 | 57.60.1150 | | 15R | MF, 1%, 0204, E24 |
| 0 | R 218 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 219 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 220 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 221 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 222 | 57.92.7013 | | 0.5A | RT 500 MA ,POLY- PTC |
| 0 | R 223 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 224 | 57.60.1271 | | 270R | MF, 1%, 0204, E24 |
| 0 | R 225 | 57.60.1271 | | 270R | MF, 1%, 0204, E24 |
| 0 | R 226 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 227 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 228 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 229 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 230 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 231 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 232 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 233 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 234 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |



## AUX MASTER MAIN BOARD 1.980.302.00

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | R 235 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 236 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 237 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 238 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 239 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 240 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 241 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 242 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 243 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 244 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 245 | 57.60.1271 | | 270R | MF, 1%, 0204, E24 |
| 0 | R 246 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 247 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 248 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 249 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 250 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 251 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 252 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 253 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 254 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 255 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 256 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 257 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 258 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 259 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 260 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 261 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 262 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 263 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 264 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 265 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 266 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 267 | 57.60.1000 | | 0R0 | MF, 0204 |
| 0 | R 268 | 57.60.1000 | | 0R0 | MF, 0204 |
| 0 | R 269 | 57.60.1000 | | 0R0 | MF, 0204 |
| 0 | R 270 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 271 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 272 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 273 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 274 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 275 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 276 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 277 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 278 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 279 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 280 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 281 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 282 | 57.60.1100 | | 10R | MF, 1%, 0204, E24 |
| 0 | R 283 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 284 | 57.60.1000 | | 0R0 | MF, 0204 |
| 0 | R 285 | 57.60.1000 | | 0R0 | MF, 0204 |
| 0 | R 286 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 287 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 288 | 57.60.1100 | | 10R | MF, 1%, 0204, E24 |
| 0 | R 289 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 290 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 291 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 292 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 293 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 294 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 295 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 296 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 297 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 298 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 299 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 300 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 301 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 302 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 303 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 304 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 305 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 306 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 307 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 308 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 309 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 310 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 311 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 1 | R 312 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 313 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 314 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 315 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 316 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 317 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 318 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 319 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 320 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 321 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 322 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 1 | R 323 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 324 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 325 | 57.60.1561 | | 560R | MF, 1%, 0204, E24 |
| 0 | R 326 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 327 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 328 | 57.60.1561 | | 560R | MF, 1%, 0204, E24 |
| 0 | R 329 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 330 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 331 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 332 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 333 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 334 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 335 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 336 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 337 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 338 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 339 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 340 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 341 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 342 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 343 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 344 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 345 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 346 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 347 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 348 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 349 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 350 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 351 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 352 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 353 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 1 | R 354 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 355 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 356 | 57.60.1564 | | 560K | MF, 1%, 0204, E24 |
| 0 | R 357 | 57.60.1155 | | 1M5 | MF, 1%, 0204, E24 |
| 0 | R 358 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 359 | 57.60.1103 | | 10K | MF, 1%, 0204, E24 |
| 0 | R 360 | 57.60.1153 | | 15K | MF, 1%, 0204, E24 |
| 0 | R 361 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 362 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 363 | 57.60.1682 | | 6K8 | MF, 1%, 0204, E24 |
| 0 | R 364 | 57.60.1221 | | 220R | MF, 1%, 0204, E24 |
| 0 | R 365 | 57.60.1274 | | 270K | MF, 1%, 0204, E24 |
| 0 | R 366 | 57.60.1124 | | 120K | MF, 1%, 0204, E24 |
| 0 | R 367 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 368 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 369 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 370 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 371 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 372 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 1 | R 373 | 57.60.1471 | | 470R | MF, 1%, 0204, E24 |
| 0 | R 374 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 375 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 376 | 57.60.1562 | | 5K6 | MF, 1%, 0204, E24 |
| 0 | R 377 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 378 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 379 | 57.60.1334 | | 330K | MF, 1%, 0204, E24 |
| 0 | R 380 | 57.60.1334 | | 330K | MF, 1%, 0204, E24 |
| 0 | R 381 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 382 | 57.60.1330 | | 33R | MF, 1%, 0204, E24 |
| 0 | R 383 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 384 | 57.60.1473 | | 47K | MF, 1%, 0204, E24 |
| 0 | R 385 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 386 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | R 387 | 57.60.1332 | | 3K3 | MF, 1%, 0204, E24 |
| 0 | R 388 | 57.60.1223 | | 22K | MF, 1%, 0204, E24 |
| 0 | RA 1 | 1.010.122.58 | | Pot | POT 10K +LOG; |
| 0 | RA 2 | 1.010.122.58 | | Pot | POT 10K +LOG; |
| 0 | RA 3 | 1.010.122.58 | | Pot | POT 10K +LOG; |
| 0 | RA 4 | 1.010.122.58 | | Pot | POT 10K +LOG; |
| 0 | RA 5 | 1.010.127.58 | | Pot | POT 10K+LOG; 22K LIN; 22K LIN |
| 0 | RA 6 | 1.010.125.58 | | Pot | POT 2 * 10K +LOG; |
| 0 | RA 7 | 1.010.127.58 | | Pot | POT 10K+LOG; 22K LIN; 22K LIN |
| 0 | RA 8 | 1.010.125.58 | | Pot | POT 2 * 10K +LOG; |
| 0 | RA 9 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |

## AUX MASTER MAIN BOARD 1.980.302.00

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | RA 10 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 11 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 12 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 13 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 14 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 15 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 16 | 58.01.9502 | | 5k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 17 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RZ 1 | 57.88.4104 | | 100k | RZ 8 * 100 K, 2%, SIP 9 |
| 0 | RZ 2 | 57.88.4104 | | 100k | RZ 8 * 100 K, 2%, SIP 9 |
| 0 | RZ 3 | 57.88.4104 | | 100k | RZ 8 * 100 K, 2%, SIP 9 |
| 0 | RZ 4 | 57.88.4104 | | 100k | RZ 8 * 100 K, 2%, SIP 9 |
| 0 | RZ 5 | 57.88.4104 | | 100k | RZ 8 * 100 K, 2%, SIP 9 |
| 0 | RZ 6 | 57.88.4104 | | 100k | RZ 8 * 100 K, 2%, SIP 9 |
| 1 | W 1 | 53.03.0240 | 2 pcs | | XLED SINGLE LINE, 2 POL. PRINT |
| 0 | XIC 2 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 10 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 12 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 17 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 19 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 20 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 21 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 22 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 24 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 28 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 29 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 30 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 31 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 32 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 35 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 41 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 42 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 43 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 46 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 47 | 53.03.0168 | | XIC16p | XIC DIL 16-POL |
| 0 | XIC 48 | 53.03.0168 | | XIC16p | XIC DIL 16-POL |
| 0 | XIC 49 | 53.03.0167 | | XIC14p | XIC DIL 14-POL |
| 0 | XIC 50 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 56 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 57 | 53.03.0172 | | XIC40p | XIC DIL 40-POL, |
| 0 | XIC 58 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 60 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 64 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 66 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 67 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 68 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 70 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 71 | 53.03.0175 | | XIC18p | XIC DIL 18-POL, |
| 0 | XIC 77 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |
| 0 | XIC 78 | 53.03.0166 | | XIC8p | XIC DIL 8-POL |

End of List

Comments



## AUX MASTER SWITCH BOARD 1.980.309.00

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 2 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | C 3 | 59.60.1104 | | 100n | C 100 N , 10%, X7R , CER |
| 0 | DL 1 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | DL 2 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | DL 3 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | DL 4 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | DL 5 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | DL 6 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | DL 7 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | DL 8 | 50.04.2810 | | B1001 | DLZ B1001/3E+7GWA, 3OR/7GN |
| 0 | IC 1 | 50.62.1165 | | 74HC165 | IC .. 74 HC 165 . ,A |
| 0 | IC 2 | 50.62.1595 | | 74HC595 | IC .. 74 HC 595 . ,A |
| 0 | IC 3 | 50.62.1165 | | 74HC165 | IC .. 74 HC 165 . ,A |
| 0 | IC 4 | 50.62.1595 | | 74HC595 | IC .. 74 HC 595 . ,A |
| 0 | IC 5 | 50.62.1165 | | 74HC165 | IC .. 74 HC 165 . ,A |
| 0 | IC 6 | 50.62.1595 | | 74HC595 | IC .. 74 HC 595 . ,A |
| 0 | MP 1 | 1.980.309.04 | pce | | NR.-ETIKETTE 5 * 20 |
| 0 | MP 2 | 43.01.0108 | pce | Label | ESE-WARNSCHILD |
| 0 | MP 3 | 1.980.309.12 | pce | | AUXILIARY MASTER SWITCH PCB/I\ |
| 0 | MP 4 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | MP 5 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | MP 6 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | MP 7 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | MP 8 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | MP 9 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | MP 10 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | MP 11 | 1.862.811.02 | pce | | DISTANZSTUECK |
| 0 | P 1 | 54.14.5590 | | 20-P | P PCB-STECKER GERADE 20 P |
| 0 | P 2 | 54.14.5590 | | 20-P | P PCB-STECKER GERADE 20 P |
| 0 | P 3 | 54.14.5590 | | 20-P | P PCB-STECKER GERADE 20 P |
| 0 | P 4 | 54.14.5590 | | 20-P | P PCB-STECKER GERADE 20 P |
| 0 | P 5 | 54.14.5590 | | 20-P | P PCB-STECKER GERADE 20 P |
| 0 | Q 1 | 50.60.0002 | | BC850C | Q BC 850 C, SOT 23 |
| 0 | Q 2 | 50.60.0002 | | BC850C | Q BC 850 C, SOT 23 |
| 0 | R 1 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 2 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 3 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 4 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 5 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 6 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 7 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 8 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 9 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 10 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 11 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 12 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 13 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 14 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 15 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 16 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 17 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 18 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 19 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 20 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 21 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 22 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 23 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 24 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 25 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 26 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 27 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 28 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 29 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 30 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 31 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 32 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 33 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 34 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 35 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 36 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 37 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 38 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 39 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 40 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 41 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 42 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 43 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 44 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 45 | 57.60.1104 | | 100K | MF, 1%, 0204, E24 |
| 0 | R 46 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 47 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 48 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 49 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 50 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 51 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 52 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 53 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 54 | 57.60.1102 | | 1K | MF, 1%, 0204, E24 |
| 0 | R 55 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 56 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 57 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 58 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 59 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 60 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | R 61 | 57.60.1101 | | 100R | MF, 1%, 0204, E24 |
| 0 | S 1 | 55.15.0655 | | 1*A | S TASTE 1*A, 5MM, GN/GN |
| 0 | S 2 | 55.15.0704 | | 1*A | S TASTE 1*A, 12MM, GB/TRANS |
| 0 | S 3 | 55.15.0644 | | 1*A | S TASTE 1*A, 5MM, GB/GB |
| 0 | S 4 | 55.15.0655 | | 1*A | S TASTE 1*A, 5MM, GN/GN |
| 0 | S 5 | 55.15.0704 | | 1*A | S TASTE 1*A, 12MM, GB/TRANS |
| 0 | S 6 | 55.15.0644 | | 1*A | S TASTE 1*A, 5MM, GB/GB |
| 0 | S 7 | 55.15.0655 | | 1*A | S TASTE 1*A, 5MM, GN/GN |
| 0 | S 8 | 55.15.0704 | | 1*A | S TASTE 1*A, 12MM, GB/TRANS |
| 0 | S 9 | 55.15.0644 | | 1*A | S TASTE 1*A, 5MM, GB/GB |
| 0 | S 10 | 55.15.0655 | | 1*A | S TASTE 1*A, 5MM, GN/GN |
| 0 | S 11 | 55.15.0704 | | 1*A | S TASTE 1*A, 12MM, GB/TRANS |
| 0 | S 12 | 55.15.0644 | | 1*A | S TASTE 1*A, 5MM, GB/GB |
| 0 | S 13 | 55.15.0622 | | 1*A | S TASTE 1*A, 5MM, RT/RT |
| 0 | S 14 | 55.15.0655 | | 1*A | S TASTE 1*A, 5MM, GN/GN |
| 0 | S 15 | 55.15.0704 | | 1*A | S TASTE 1*A, 12MM, GB/TRANS |
| 0 | S 16 | 55.15.0644 | | 1*A | S TASTE 1*A, 5MM, GB/GB |
| 0 | S 17 | 55.15.0622 | | 1*A | S TASTE 1*A, 5MM, RT/RT |
| 0 | S 18 | 55.15.0655 | | 1*A | S TASTE 1*A, 5MM, GN/GN |
| 0 | S 19 | 55.15.0704 | | 1*A | S TASTE 1*A, 12MM, GB/TRANS |
| 0 | S 20 | 55.15.0644 | | 1*A | S TASTE 1*A, 5MM, GB/GB |

End of List

Comments

## AUX MASTER LINE BOARD 1.980.323.00

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.34.4101 | | 100p | C 100 P , 5%, N750 , CER |
| 0 | C 2 | 59.06.0224 | | 220n | PETP, 10%, 63V |
| 0 | C 3 | 59.34.5471 | | 470p | C 470 P , 5%,N1500 , CER |
| 0 | C 4 | 59.06.0224 | | 220n | PETP, 10%, 63V |
| 0 | C 5 | 59.34.5471 | | 470p | C 470 P , 5%,N1500 , CER |
| 0 | C 6 | 59.34.4101 | | 100p | C 100 P , 5%, N750 , CER |
| 0 | C 7 | 59.25.4102 | | 1m | C 1000 U ,-20%, 25V , EL |
| 0 | C 8 | 59.25.4102 | | 1m | C 1000 U ,-20%, 25V , EL |
| 0 | C 9 | 59.25.4102 | | 1m | C 1000 U ,-20%, 25V , EL |
| 0 | C 10 | 59.25.4102 | | 1m | C 1000 U ,-20%, 25V , EL |
| 0 | C 101 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 102 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 103 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 104 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 105 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 107 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 108 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 110 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 111 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 112 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 113 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 114 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 201 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 202 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 203 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 204 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 205 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 207 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 208 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 210 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 211 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 212 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 213 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 214 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 301 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 302 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 303 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 304 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 305 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 307 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 308 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 310 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 311 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 312 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 313 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 314 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 401 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 402 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 403 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 404 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 405 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 407 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 408 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 410 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 411 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 412 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 413 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 414 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 501 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 502 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 503 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 504 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 505 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 507 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 508 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 510 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 511 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 512 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 513 | 59.22 4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 514 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 601 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 602 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 603 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 604 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 605 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 607 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 608 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 610 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 611 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 612 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 613 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 614 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 701 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 702 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 703 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 704 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 705 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 707 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 708 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 710 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 711 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 712 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 713 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 714 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 801 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 802 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 803 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 804 | 59.06.0103 | | 10n | PETP, 10%, 63V |
| 0 | C 805 | 59.06.0333 | | 33n | PETP, 10%, 63V |
| 0 | C 807 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 808 | 59.34.2330 | | 33p | C 33 P , 5%, N150 , CER |
| 0 | C 810 | 59.05.1102 | | 1n | C 1000 P , 1%, 630V , PP |
| 0 | C 811 | 59.22.3221 | | 220u | EL 10V, 20%, rad RM5 |
| 0 | C 812 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | C 813 | 59.22.4002 | | 100uF | EL 16V, 20%, rad RM5 |
| 0 | C 814 | 59.06.0104 | | 100n | PETP, 10%, 63V |
| 0 | D 1 | 50.04.0122 | | 1N4001 | D 1 N 4001 ... 1 N 4004 |
| 0 | D 2 | 50.04.0122 | | 1N4001 | D 1 N 4001 ... 1 N 4004 |
| 0 | D 3 | 50.04.0122 | | 1N4001 | D 1 N 4001 ... 1 N 4004 |
| 0 | D 4 | 50.04.0122 | | 1N4001 | D 1 N 4001 ... 1 N 4004 |
| 0 | IC 1 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 101 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 201 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 301 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 401 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 501 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 601 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 701 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | IC 801 | 50.09.0117 | | MC33078 | IC MC 33078 P ,A |
| 0 | MP 1 | 1.980.323.04 | pce | | NR.-ETIKETTE 5 * 20 |
| 0 | MP 2 | 43.01.0108 | | Label | ESE-WARNSCHILD |
| 0 | MP 3 | 1.980.303.12 | pce | | AUXILIARY MASTER LINE PCB /I\ |
| 0 | MP 4 | 1.010.011.22 | | MP | NIETMUTTER SW 6 M 3 *1.5 |
| 0 | MP 5 | 1.010.011.22 | | MP | NIETMUTTER SW 6 M 3 *1.5 |
| 0 | MP 6 | 1.010.011.22 | | MP | NIETMUTTER SW 6 M 3 *1.5 |
| 0 | MP 7 | 1.010.011.22 | | MP | NIETMUTTER SW 6 M 3 *1.5 |
| 0 | MP 8 | 1.010.011.22 | | MP | NIETMUTTER SW 6 M 3 *1.5 |
| 0 | MP 9 | 1.010.011.22 | | MP | NIETMUTTER SW 6 M 3 *1.5 |
| 0 | MP 10 | 1.010.011.22 | | MP | NIETMUTTER SW 6 M 3 *1.5 |
| 0 | P 1 | 1.023.566.03 | | Ribbon16p | FLACHKABEL 16 POL. 0,05M |
| 0 | P 2 | 1.023.566.03 | | Ribbon16p | FLACHKABEL 16 POL. 0,05M |
| 0 | P 3 | 1.023.566.03 | | Ribbon16p | FLACHKABEL 16 POL. 0,05M |
| 0 | P 4 | 1.023.566.03 | | Ribbon16p | FLACHKABEL 16 POL. 0,05M |
| 0 | Q 101 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 102 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 103 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 104 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 105 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 106 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 107 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 108 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 201 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 202 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 203 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 204 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 205 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 206 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 207 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 208 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 301 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 302 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 303 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 304 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 305 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 306 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 307 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 308 | 50.03.0351 | | BC327-25 | PNP, 800mA |

## AUX MASTER LINE BOARD 1.980.323.00



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | Q 401 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 402 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 403 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 404 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 405 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 406 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 407 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 408 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 501 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 502 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 503 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 504 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 505 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 506 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 507 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 508 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 601 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 602 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 603 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 604 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 605 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 606 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 607 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 608 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 701 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 702 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 703 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 704 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 705 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 706 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 707 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 708 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 801 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 802 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 803 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 804 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 805 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 806 | 50.03.0340 | | BC337-25 | BC 337-25, |
| 0 | Q 807 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | Q 808 | 50.03.0351 | | BC327-25 | PNP, 800mA |
| 0 | R 1 | 57.11.3330 | | 33R | MF, 1%, 0207 |
| 0 | R 2 | 57.11.3151 | | 150R | MF, 1%, 0207 |
| 0 | R 3 | 57.11.3151 | | 150R | MF, 1%, 0207 |
| 0 | R 4 | 57.11.3330 | | 33R | MF, 1%, 0207 |
| 0 | R 5 | 57.92.7021 | | 0.9A | RT 0.90A ,POLY- PTC |
| 0 | R 6 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 7 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 8 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 9 | 57.92.7021 | | 0.9A | RT 0.90A ,POLY- PTC |
| 0 | R 101 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 102 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 103 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 104 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 105 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 106 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 107 | 57.11.3331 | | 330R | MF, 1%, 0207 |
| 0 | R 108 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 109 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 110 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 111 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 112 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 113 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 114 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 115 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 116 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 117 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 201 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 202 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 203 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 204 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 205 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 206 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 207 | 57.11.3331 | | 330R | MF, 1%, 0207 |
| 0 | R 208 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 209 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 210 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 211 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 212 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 213 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 214 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 215 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 216 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 217 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 301 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 302 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 303 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 304 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 305 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 306 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 307 | 57.11.3331 | | 330R | MF, 1%, 0207 |
| 0 | R 308 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 309 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 310 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 311 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 312 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 313 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 314 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 315 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 316 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 317 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 401 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 402 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 403 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 404 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 405 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 406 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 407 | 57.11.3331 | | 330R | MF, 1%, 0207 |
| 0 | R 408 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 409 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 410 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 411 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 412 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 413 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 414 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 415 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 416 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 417 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 501 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 502 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 503 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 504 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 505 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 506 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 507 | 57.11.3331 | | 330R | MF, 1%, 0207 |
| 0 | R 508 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 509 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 510 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 511 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 512 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 513 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 514 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 515 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 516 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 517 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 601 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 602 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 603 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 604 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 605 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 606 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 607 | 57.11.3331 | | 330R | MF, 1%, 0207 |
| 0 | R 608 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 609 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 610 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 611 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 612 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 613 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 614 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 615 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 616 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 617 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 701 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 702 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 703 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 704 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 705 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 706 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 707 | 57.11.3331 | | 330R | MF, 1%, 0207 |

## AUX MASTER LINE BOARD 1.980.323.00

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | R 708 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 709 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 710 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 711 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 712 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 713 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 714 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 715 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 716 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 717 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 801 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 802 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 803 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 804 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 805 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 806 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 807 | 57.11.3331 | | 330R | MF, 1%, 0207 |
| 0 | R 808 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 809 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 810 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 811 | 57.11.3302 | | 3k0 | MF, 1%, 0207 |
| 0 | R 812 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 813 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 814 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 815 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 816 | 57.11.3100 | | 10R | MF, 1%, 0207 |
| 0 | R 817 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | RA 101 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RA 201 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RA 301 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RA 401 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RA 501 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RA 601 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RA 701 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | RA 801 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | T 101 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |
| 0 | T 201 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |
| 0 | T 301 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |
| 0 | T 401 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |
| 0 | T 501 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |
| 0 | T 601 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |
| 0 | T 701 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |
| 0 | T 801 | 1.022.366.00 | | Trafo | LINE OUTPUT TRAFO 1:1,27 |

End of List

Comments

## Pin assignment P4A
## AUX MASTER UNIT to AUB BOARD (1.992.18x)
## Valid for:
## All AUX master units

| P4 | NO | NAME | REMARK | TYPE |
|---|---|---|---|---|
| P | 01A | 0V-B | Audio ground (pin) | B |
| P | 01B | CHASSIS | METAL FRAME | B |
| P | 02A | 0V-RET | 0V return from audio star | O |
| P | 02B | B-MPX | MPX mono bus; 0-Ω bus; input | O,I |
| P | 03A | | | B |
| P | 03B | | | B |
| P | 04A | MET-BR | Meter brightness | B,DC |
| P | 04B | | | B,I |
| P | 05A | B-PFL-SOLO-L | PFL/SOLO left ; 0-Ω bus | B,I |
| P | 05B | B-PFL-SOLO-R | PFL/SOLO right ; 0-Ω bus | B,I |
| P | 06A | | | B,I |
| P | 06B | | | B,I |
| P | 07A | | | B,I |
| P | 07B | | | B,I |
| P | 08A | | | B,I |
| P | 08B | | | B,I |
| P | 09A | | | B,I |
| P | 09B | | | B,I |
| P | 10A | | | B,I |
| P | 10B | | | B,I |
| P | 11A | | | B,I |
| P | 11B | | | B,I |
| P | 12A | | | B,I |
| P | 12B | | | B,I |
| P | 13A | | | B,I |
| P | 13B | | | B,I |
| P | 14A | 0V-REF | 0V reference | B X X |
| P | 14B | 0V-REF | 0V reference | B X X |
| P | 15A | | | B,I |
| P | 15B | | | B,I |
| P | 16A | | | B,I |
| P | 16B | | | B,I |
| P | 17A | | | B,I |
| P | 17B | | | B,I |
| P | 18A | | | B,I |
| P | 18B | | | B,I |
| P | 19A | | | B,I |
| P | 19B | | | B,I |
| P | 20A | | | B,I |
| P | 20B | | | B,I |
| P | 21A | | | B,I |
| P | 21B | | | B,I |
| P | 22A | | | B,I |
| P | 22B | | | B,I |
| P | 23A | B-AUX-1 | AUX 1 input ; 0-Ω bus | O,I |
| P | 23B | B-AUX-2 | AUX 2 input ; 0-Ω bus | O,I |
| P | 24A | B-AUX-3 | AUX 3 input ; 0-Ω bus | O,I |
| P | 24B | B-AUX-4 | AUX 4 input ; 0-Ω bus | O,I |
| P | 25A | B-AUX-5 | AUX 5 input ; 0-Ω bus | O,I |
| P | 25B | B-AUX-6 | AUX 6 input ; 0-Ω bus | O,I |
| P | 26A | B-AUX-7 | AUX 7 input ; 0-Ω bus | O,I |
| P | 26B | B-AUX-8 | AUX 8 input ; 0-Ω bus | O;I |
| P | 27A | 0V-A | Audio ground | B X X |
| P | 27B | 0V-A | Audio ground | B X X |
| P | 28A | -15.5V | - Supply | B X X |
| P | 28B | -15.5V | - Supply | B X X |
| P | 29A | +15.5V | +Supply | B X X |
| P | 29B | +15.5V | +Supply | B X X |
| P | 30A | 0V-L | Ground signal (logic) | B X X |
| P | 30B | 0V-L | Ground signal (logic) | B X X |
| P | 31A | +5V-SB | + Stand by supply | B X X |
| P | 31B | +5V-SB | + Stand by supply | B X X |
| P | 32A | +3_4V-LED | LED supply variable +3...4V | B X X |
| P | 32B | +3_4V-LED | LED supply variable +3...4V | B X X |

I = Input O = Output AC = Audio DC = Supply or CV
DI = Digital L = Line B = Bus C = Connector
SY = Balanced AS = Unbalanced NO = Normal IV = Inverted
* = not connected

## Pin assignment P5A
## AUX MASTER UNIT to INPUT/OUTPUT CONNECTOR 4A / DIGITAL BUS BOARD (1.980.712.00)
## Valid for:
## All AUX master units

| P5 | NO | NAME | REMARK | TYPE |
|---|---|---|---|---|
| P | 01A | A-0 | Address A 0 (in layout for positions 1...4) | HW wired |
| P | 01B | A-1 | Address A 1 (in layout for positions 1...4) | HW wired |
| P | 02A | A-2 | Address A 2 bus with Jumper 5...8 | Bus HW jumper |
| P | 02B | A-3 | Address A 3 bus with Jumper 9...16 | Bus HW jumper |
| P | 03A | A-4 | Address A 4 bus with Jumper 17...32 | Bus HW jumper |
| P | 03B | A-5 | Address A 5 bus with Jumper 33...64 | Bus HW jumper |
| P | 04A | A-6 | Address A 6 bus with Jumper 65...128 | Bus HW jumper |
| P | 04B | EXTEND0 | Jumper on 1.980.765.00 for Dynamic Extension selection | HW jumper |
| P | 05A | EXTEND1 | Jumper on 1.980.765.00 for Multichannel Extension selection | HW jumper |
| P | 05B | EXTEND2 | Jumper on 1.980.765.00 for Multichannel Extension selection | HW jumper |
| P | 06A | RESERVE | RB7 | O 6-pin |
| P | 06B | DO0 | Enable | O 6-pin |
| P | 07A | TXDF | Serial data | O 6-pin |
| P | 07B | TCL | Clock | O 6-pin |
| P | 08A | TSTB1 | Strobe to INSTRUMENT / LIMITER | O 6-pin |
| P | 08B | TSTB2 | Strobe to 32 Extension | O 6-pin |
| P | 09A | ADR-DAT | SYM ADDRESS/DATA | B 16-pin |
| P | 09B | IADR-DAT | SYM ADRESS/DATA INVERT | B 16-pin |
| P | 10A | SEL | SELECT | B 16-pin |
| P | 10B | ISEL | SELECT INVERT | B 16-pin |
| P | 11A | DAT | DATA | B 16-pin |
| P | 11B | IDAT | DATA INVERT | B 16-pin |
| P | 12A | CLK | Clock | B 16-pin |
| P | 12B | ICLK | Clock INVERT | B 16-pin |
| P | 13A | AUX5/6-2CH | Central bus AUX-5/6 - 2CH | B 16-pin |
| P | 13B | AUX7/8-2CH | Central bus AUX-7/8 - 2CH | B 16-pin |
| P | 14A | MASTER-TB | Central bus RD4 MASTER TB | B 16-pin |
| P | 14B | N-1 | Central bus RD0 (N-1) switch | B 16-pin |
| P | 15A | PFLRES | Central bus RD1 PFLRES | B 16-pin |
| P | 15B | PFLSIGN | Central bus PFL Signal | B 16-pin |
| P | 16A | +5.5V | +Supply | B 16-pin |
| P | 16B | 0V-L | Ground signal (logic) | B 16-pin |

I = input O = Output AC = Audio DC = supply or CV
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* = not connected

## Pin assignment P6A
## AUX MASTER UNIT to INPUT/OUTPUT CONNECTOR 4A / DIGITAL BUS BOARD (1.980.712.00)
## Valid for:
## All AUX master units

| P6 | NO | NAME | REMARK | TYPE |
|---|---|---|---|---|
| P | 01A | AUX-1-OUT-A | AUX output 1 A | S,O |
| P | 01B | AUX-1-OUT-B | AUX output 1 B | S,O |
| P | 02A | AUX-0VE | AUX output ground external | O |
| P | 02B | AUX-0VE | AUX output ground external | O |
| P | 03A | AUX-2-OUT-A | AUX output 2 A | S,O |
| P | 03B | AUX-2-OUT-B | AUX output 2 B | S,O |
| P | 04A | AUX-3-OUT-A | AUX output 3 A | S,O |
| P | 04B | AUX-3-OUT-B | AUX output 3 B | S,O |
| P | 05A | AUX-0VE | AUX output ground external | O |
| P | 05B | AUX-0VE | AUX output ground external | O |
| P | 06A | AUX-4-OUT-A | AUX output 4 A | S,O |
| P | 06B | AUX-4-OUT-B | AUX output 4 B | S,O |
| P | 07A | | | |
| P | 07B | | | |
| P | 08A | | | |
| P | 08B | | | |
| P | 09A | | | |
| P | 09B | | | |
| P | 10A | AUX-5-OUT-A | AUX output 5 A | S,O |
| P | 10B | AUX-5-OUT-B | AUX output 5 B | S,O |
| P | 11A | AUX-6-OUT-A | AUX output 6 A | S,O |
| P | 11B | AUX-6-OUT-B | AUX output 6 B | S,O |
| P | 12A | | | |
| P | 12B | | | |
| P | 13A | | | |
| P | 13B | | | |
| P | 14A | | | |
| P | 14B | | | |
| P | 15A | | | |
| P | 15B | | | |
| P | 16A | | | |
| P | 16B | RESERVE_1 | (Conn. 1 wire to Tp 14) | |
| P | 17A | | | |
| P | 17B | POWER_FAIL | Power fail link | |
| P | 18A | | | |
| P | 18B | RESERVE_2 | Wire connection | |
| P | 19A | TB-INP-A | Talkback input A | O |
| P | 19B | | | |
| P | 20A | TB-INP-0V | Talkback input GROUND | O |
| P | 20B | | | |
| P | 21A | VU_PPM-SEL | VU/PPM selector | |
| P | 21B | 0V-L | For wire link to 21A (PPM ) | O |
| P | 22A | | | |
| P | 22B | TB_SIGN | Talkback Signal | O |
| P | 23A | | | |
| P | 23B | | | |
| P | 24A | | (MIC 1) | B |
| P | 24B | | (48 V Phantom) | B |
| P | 25A | | (Generator bus A) | B |
| P | 25B | | (Generator bus B) | B |
| P | 26A | TB-A | Talkback bus output A | B |
| P | 26B | TB-B | Talkback bus output B | B |
| P | 27A | MPX-A | MPX mono bus output A | B |
| P | 27B | MPX-B | MPX mono bus output B | B |
| P | 28A | | | |
| P | 28B | | | |
| P | 29A | AUX-7-OUT-A | AUX output 7 A | S,O |
| P | 29B | AUX-7-OUT-B | AUX output 7 B | S,O |
| P | 30A | | | |
| P | 30B | | | |
| P | 31A | AUX-8-OUT-A | AUX output 8 A | S,O |
| P | 31B | AUX-8-OUT-B | AUX output 8 B | S,O |
| P | 32A | | | |
| P | 32B | | | |

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## Pin assignment P6C
## 4 x 16-pin flat cable connections AUX MASTER MAIN BOARD to AUX MASTER LINE BOARD
## Valid for:
## AUX MASTER UNIT WITH TRANSFORMER OUTPUTS

| P16P | NO | NAME | REMARK | TYPE |
|---|---|---|---|---|
| P21 | 1 | AUX_1_OUT_A | From Board | L;AC |
| P21 | 2 | AUX_1_OUT_B | From Board | L;AC |
| P21 | 3 | AUX_1_OUT_A | To Output | L;AC |
| P21 | 4 | AUX_1_OUT_B | To Output | L;AC |
| P21 | 5 | 0V_E | Ground | DC |
| P21 | 6 | 0V_E | Ground | DC |
| P21 | 7 | AUX_2_OUT_A | From Board | L;AC |
| P21 | 8 | AUX_2_OUT_B | From Board | L;AC |
| P21 | 9 | AUX_2_OUT_A | To Output | L;AC |
| P21 | 10 | AUX_2_OUT_B | To Output | L;AC |
| P21 | 11 | | | |
| P21 | 12 | | | |
| P21 | 13 | | | |
| P21 | 14 | | | |
| P21 | 15 | | | |
| P21 | 16 | | | |

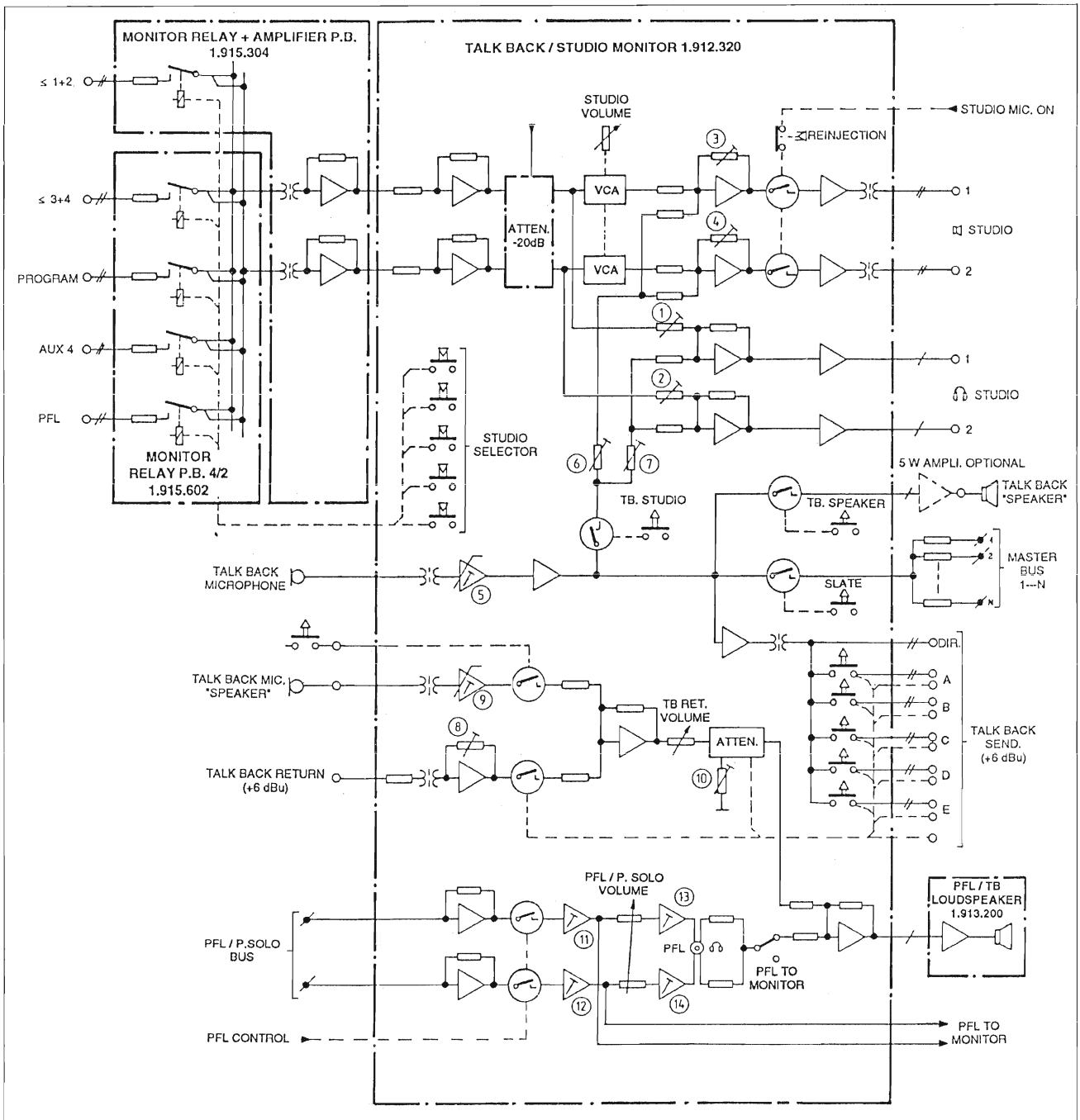
| P16P | NO | NAME | REMARK | TYPE |
|---|---|---|---|---|
| P22 | 1 | AUX_3_OUT_A | From Board | L;AC |
| P22 | 2 | AUX_3_OUT_B | From Board | L;AC |
| P22 | 3 | AUX_3_OUT_A | To Output | L;AC |
| P22 | 4 | AUX_3_OUT_B | To Output | L;AC |
| P22 | 5 | 0V_E | Ground | DC |
| P22 | 6 | 0V_E | Ground | DC |
| P22 | 7 | AUX_4_OUT_A | From Board | L;AC |
| P22 | 8 | AUX_4_OUT_B | From Board | L;AC |
| P22 | 9 | AUX_4_OUT_A | To Output | L;AC |
| P22 | 10 | AUX_4_OUT_B | To Output | L;AC |
| P22 | 11 | | | |
| P22 | 12 | 0V_REF | | DC |
| P22 | 13 | 0V_REF | | DC |
| P22 | 14 | | | |
| P22 | 15 | +15.5V | | DC |
| P22 | 16 | +15.5V | | DC |

| P16P | NO | NAME | REMARK | TYPE |
|---|---|---|---|---|
| P23 | 1 | AUX_5_OUT_A | From Board | L;AC |
| P23 | 2 | AUX_5_OUT_B | From Board | L;AC |
| P23 | 3 | AUX_5_OUT_A | To Output | L;AC |
| P23 | 4 | AUX_5_OUT_B | To Output | L;AC |
| P23 | 5 | 0V_E | Ground | DC |
| P23 | 6 | 0V_E | Ground | DC |
| P23 | 7 | AUX_6_OUT_A | From Board | L;AC |
| P23 | 8 | AUX_6_OUT_B | From Board | L;AC |
| P23 | 9 | AUX_6_OUT_A | To Output | L;AC |
| P23 | 10 | AUX_6_OUT_B | To Output | L;AC |
| P23 | 11 | | | |
| P23 | 12 | | | |
| P23 | 13 | | | |
| P23 | 14 | | | |
| P23 | 15 | -15.5V | | DC |
| P23 | 16 | -15.5V | | DC |

| P16P | NO | NAME | REMARK | TYPE |
|---|---|---|---|---|
| P24 | 1 | AUX_7_OUT_A | From Board | L;AC |
| P24 | 2 | AUX_7_OUT_B | From Board | L;AC |
| P24 | 3 | AUX_7_OUT_A | To Output | L;AC |
| P24 | 4 | AUX_7_OUT_B | To Output | L;AC |
| P24 | 5 | 0V_E | Ground | DC |
| P24 | 6 | 0V_E | Ground | DC |
| P24 | 7 | AUX_8_OUT_A | From Board | L;AC |
| P24 | 8 | AUX_8_OUT_B | From Board | L;AC |
| P24 | 9 | AUX_8_OUT_A | To Output | L;AC |
| P24 | 10 | AUX_8_OUT_B | To Output | L;AC |
| P24 | 11 | | | |
| P24 | 12 | | | |
| P24 | 13 | | | |
| P24 | 14 | | | |
| P24 | 15 | | | |
| P24 | 16 | | | |

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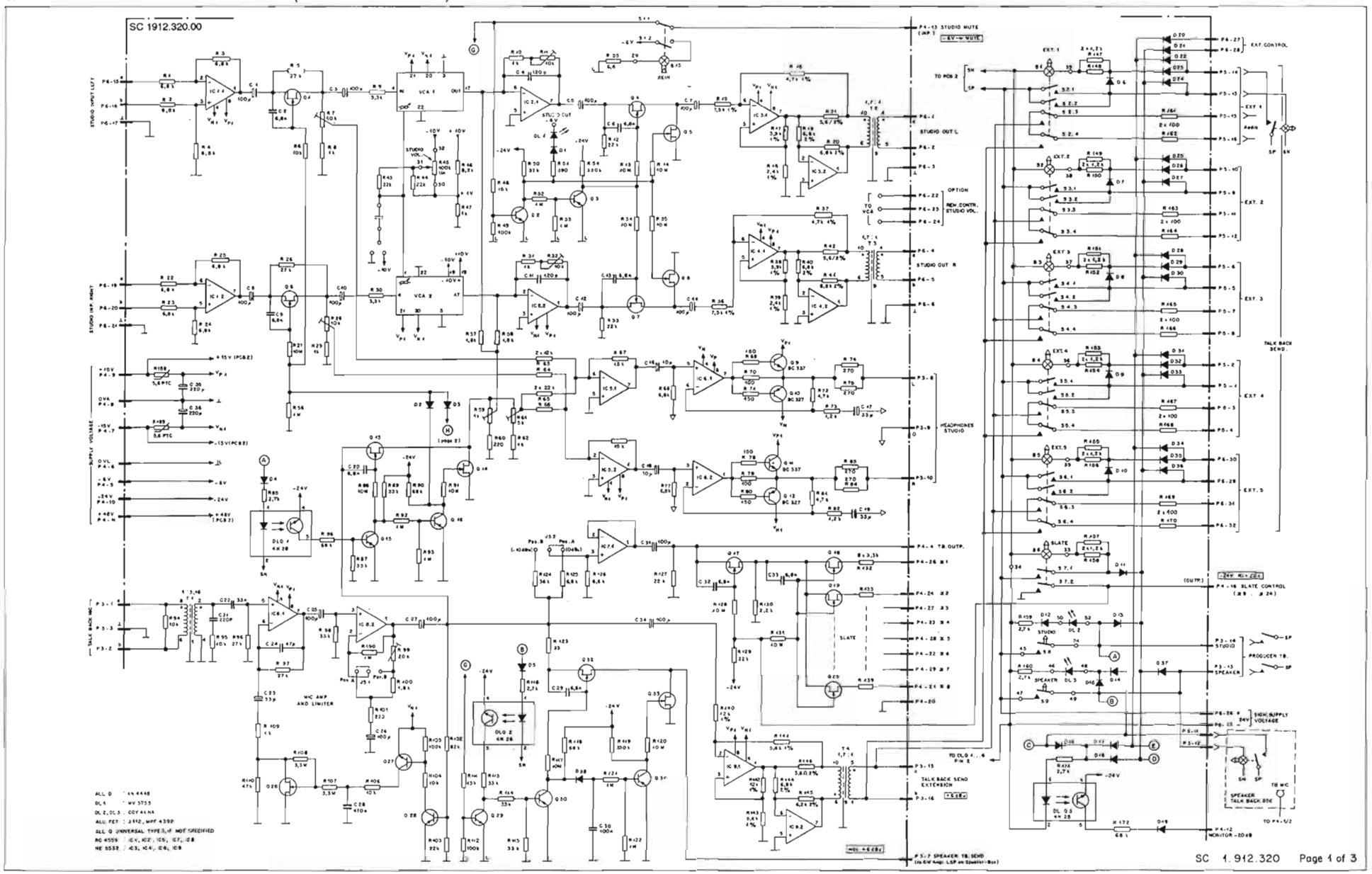
## BLOCK DIAGRAM
## TALK BACK / STUDIO MONITOR 1.912.326




The numbers relate to the block diagram.

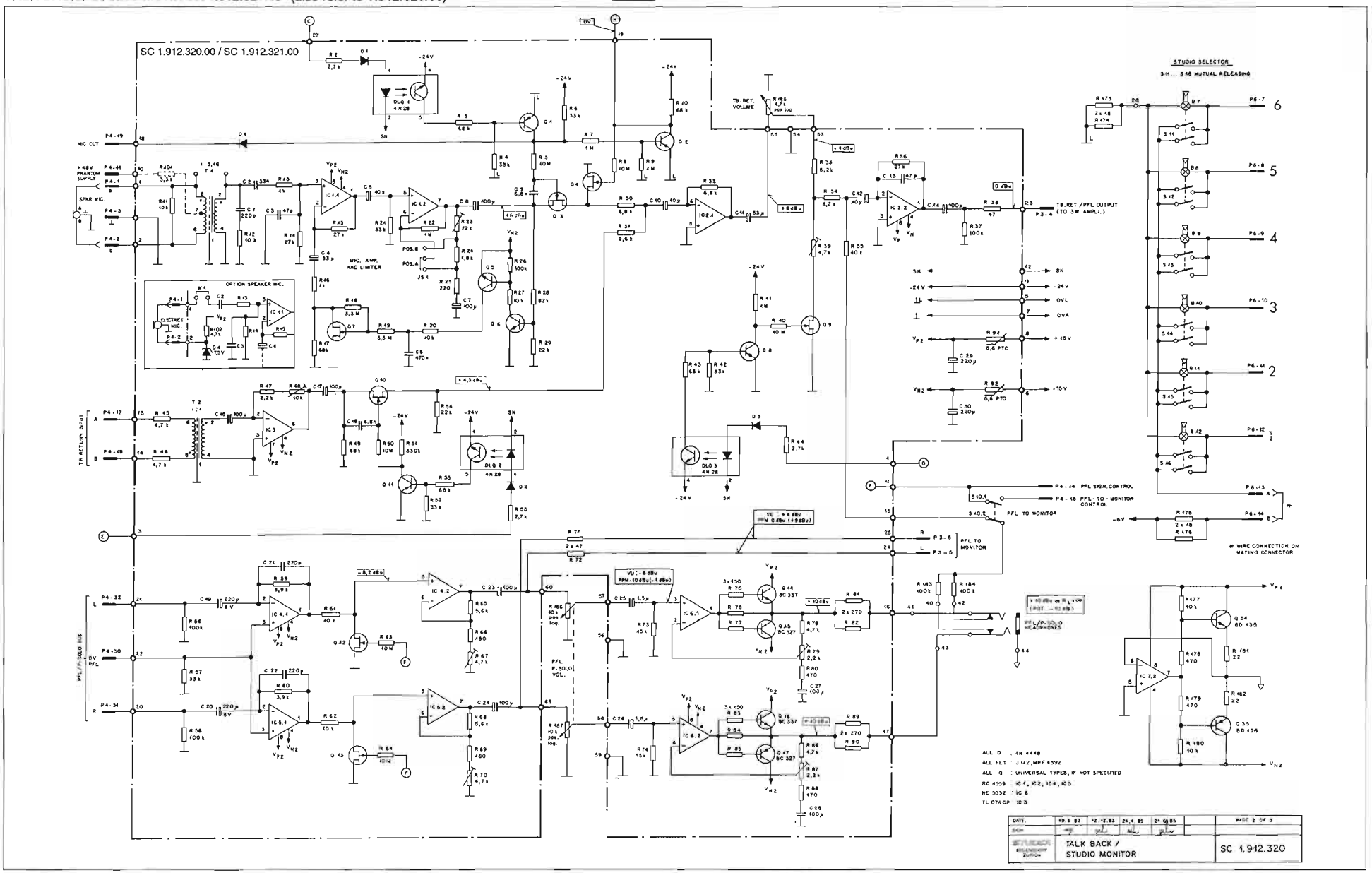
| | | |
|---|---|---|
| 1 | Input level to headphones studio, left | R7 |
| 2 | Input level to headphones studio, right | R28 |
| 3 | Studio output level, left | R11 |
| 4 | Sudio output level, right | R32 |
| 5 | Input level talk back mic. | R99 |
| 6 | Talk back level studio speaker | R59 |
| 7 | Talk back level studio headphones | R61 |
| 8 | Talk back return level (line input) | R48 |
| 9 | Talk back return level speaker mic. | R23 |
| 10 | Attenuation talk back return level | R39 |
| 11 | Level PFL/P SOLO left | R67 |
| 12 | Level PFL/P SOLO right | R70 |
| 13 | Level PFL/P SOLO headphones left | R79 |
| 14 | Level PFL/P SOLO headphones right | R87 |

## TALK BACK / STUDIO MONITOR 1.912.320.00 (also refer to 1.912.326.00)

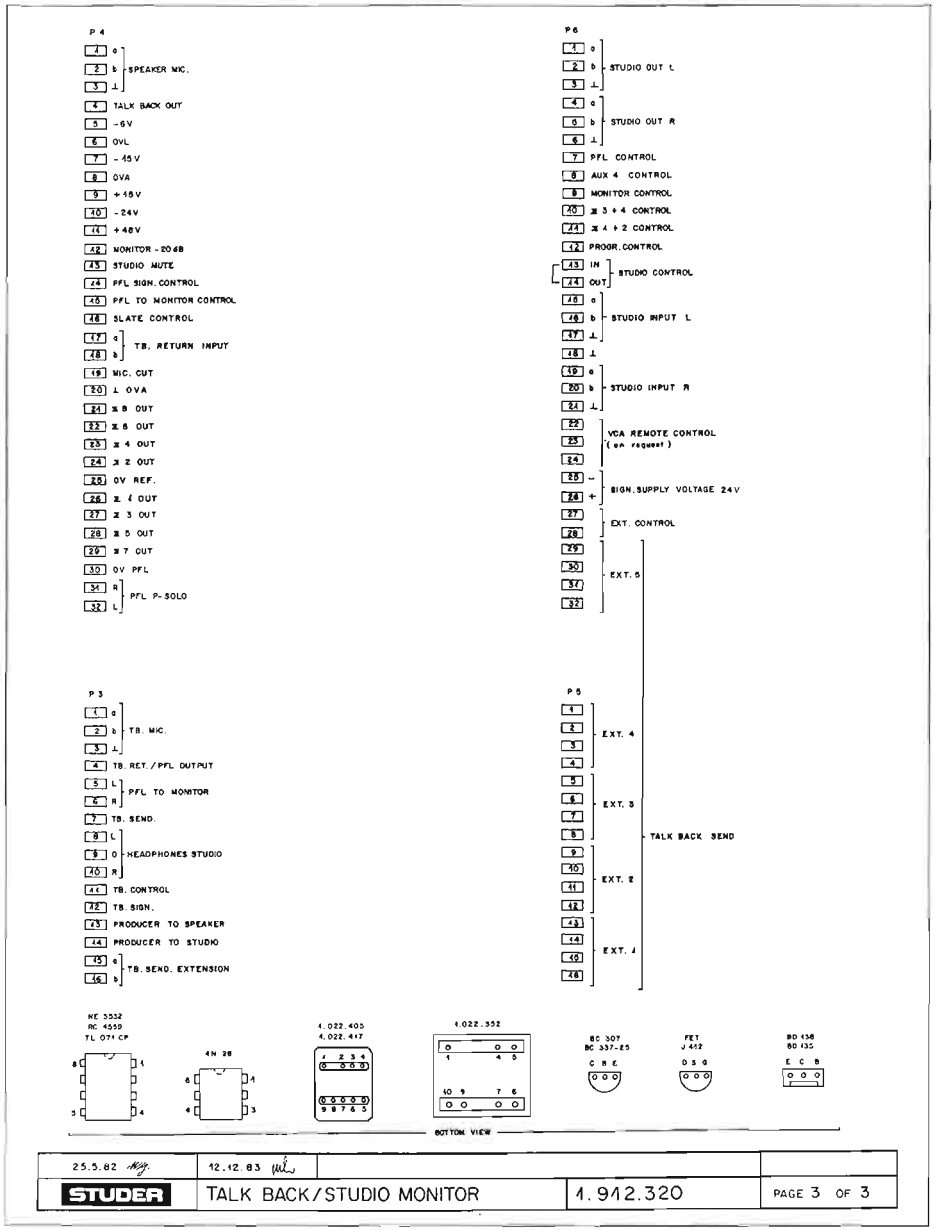



SC 1.912.320 Page 1 of 3

## TALK BACK / STUDIO MONITOR 1.912.320.00 (also refer to 1.912.326.00)

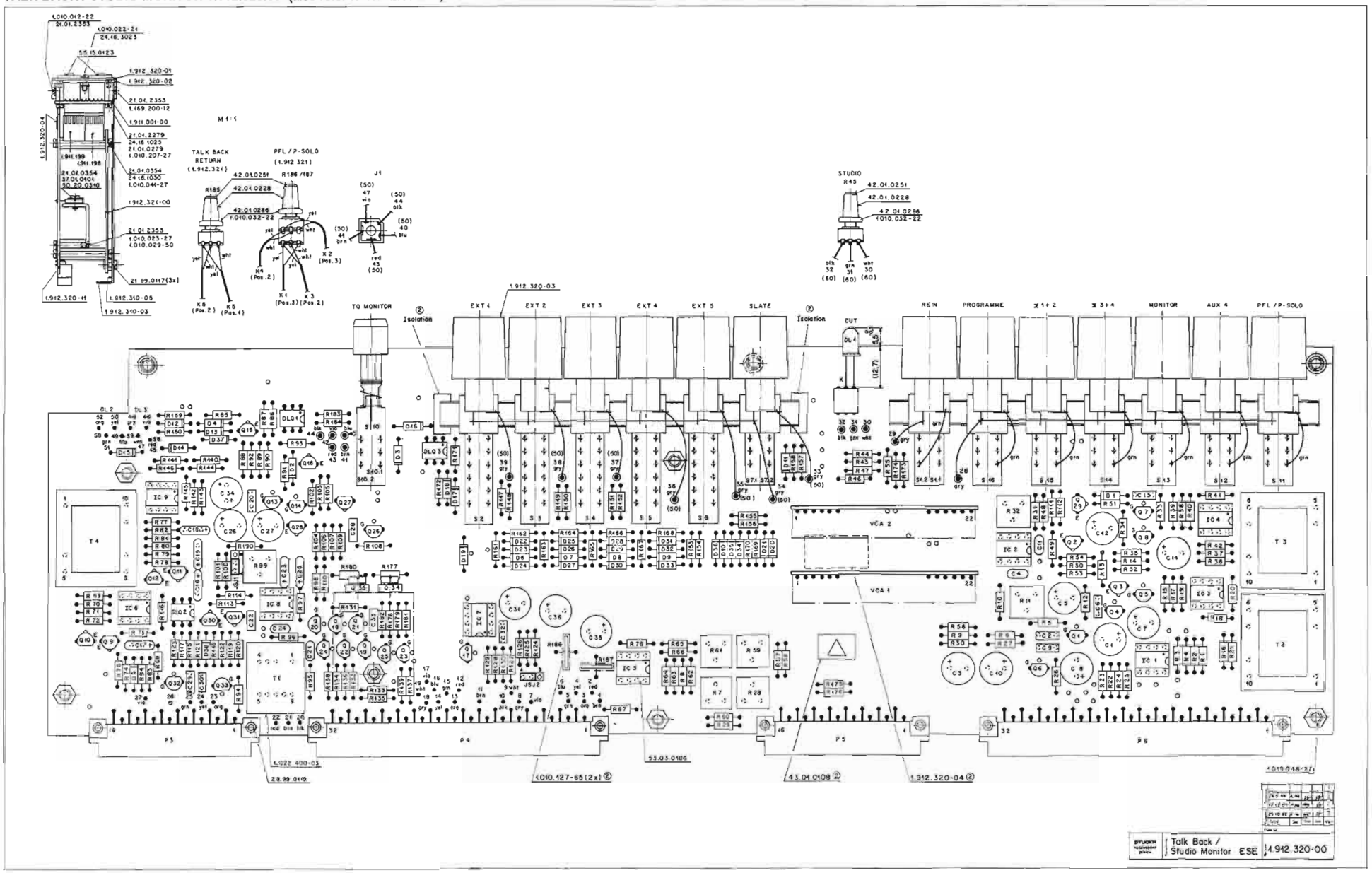


## TALK BACK / STUDIO MONITOR 1.912.320.00 (also refer to 1.912.326.00)




| | | | |
|---|---|---|---|
| 25.5.82 | 12.12.83 | | |
| STUDER | TALK BACK/STUDIO MONITOR | 1.912.320 | PAGE 3 OF 3 |

**TALK BACK / STUDIO MONITOR 1.912.320.00** (also refer to 1.912.326.00)



## TALK BACK / STUDIO MONITOR 1.912.320.00 (also refer to 1.912.326.00)

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | BA-343 | 54.02.0444 | 6V, 30mA | Lamp TAL | |
| | C1 | 59.22.4104 | 100 µF | EL 16V | |
| | C2 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C3 | 59.22.4104 | 100 µF | EL 16V | |
| | C4 | 59.34.4121 | 120 pF | CER 5% | |
| | C5 | 59.22.4104 | 100 µF | EL 16V | |
| | C6 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C7 | 59.22.4104 | 100 µF | EL 16V | |
| | C8 | 59.22.4104 | 100 µF | EL 16V | |
| | C9 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C10 | 59.22.4104 | 100 µF | EL 16V | |
| | C11 | 59.34.4121 | 120 pF | CER 5% | |
| | C12 | 59.22.4104 | 100 µF | EL 16V | |
| | C13 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C14 | 59.22.4104 | 100 µF | EL 16V | |
| | C15 | | | | |
| | C16 | 59.26.2400 | 10 µF | SAL 16V | |
| | C17 | 59.26.1330 | 33 µF | SAL 10V | |
| | C18 | 59.26.2400 | 10 µF | SAL 16V | |
| | C19 | 59.26.1330 | 33 µF | SAL 10V | |
| | C20 | 59.06.0682 | 6,8nF | PE 10% | |
| | C21 | 59.34.4221 | 220pF | CER 5% | |
| | C22 | 59.06.0333 | 33nF | PE 10% | |
| | C23 | 59.26.1330 | 33 µF | SAL 10V | |
| | C24 | 59.34.2470 | 47 pF | CER 5% | |
| | C25 | 59.26.2400 | 10 µF | SAL 16V | |
| | C26 | 59.22.4104 | 100 µF | EL 16V | |
| | C27 | 59.22.4104 | 100 µF | EL 16V | |
| | C28 | 59.06.0474 | 470nF | PE 10% | |
| | C29 | 59.06.0682 | 68nF | PE 10% | |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | CER Ceramic |
| 3 | | | EL Electrolytic |
| 2 | | | PE Polyester |
| 1 | 12.12.83 | A Hr sig | SAL Solid Aluminium Lacquered |
| 0 | 08-01-82 | sig | |

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 1 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | Q1 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q2 | 50.03.0545 | P-N-P | * | any |
| | Q3 | 50.03.0545 | P-N-P | * | any |
| | Q4 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q5 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q6 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q7 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q8 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q9 | 50.03.0340 | N-P-N | BC337-25 or equivalent | any |
| | Q10 | 50.03.0354 | P-N-P | BC327-25 or equivalent | any |
| | Q11 | 50.03.0340 | N-P-N | BC337-25 or equivalent | any |
| | Q12 | 50.03.0354 | P-N-P | BC327-25 or equivalent | any |
| | Q13 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q14 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se,N,M |
| | Q15 | 50.03.0545 | P-N-P | * | any |
| | Q16 | 50.03.0545 | P-N-P | * | any |
| | Q17 | | | | |
| | Q18 | | | | |
| | Q19 | | | | |
| | Q20 | | | | |
| | Q21 | | | | |
| | Q22 | 50.03.0350 | J-N-FET | J442 MPF4392 | Se,N,M |
| | Q23 | | | | |
| | Q24 | | | | |
| | Q25 | | | | |
| | Q26 | | | | |
| | Q27 | 50.03.0340 | N-P-N | * | any |
| | Q28 | 50.03.0545 | P-N-P | * | any |
| | Q29 | 50.03.0545 | P-N-P | * | any |
| | Q30 | 50.03.0545 | P-N-P | * | any |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | M Motorola |
| 3 | | | N National |
| 2 | | | Se Siliconix |
| 1 | 12.12.83 | A Hr sig | * Universal type, $R_{DS} < 150$, $V_{BR} > 40V$ |
| 0 | 08-01-82 | sig | |

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 3 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | P25 | 57.11.4682 | 6,8k | 2% | |
| | P26 | 57.11.4273 | 27 k | | |
| | P27 | 57.11.6106 | 10 M | | |
| | P28 | 58.04.8103 | 10 k | 10% Trim-Pot. | |
| | P29 | 57.11.4102 | 1 k | | |
| | P30 | 57.11.4332 | 33 k | | |
| | P31 | 57.11.4102 | 1 k | | |
| | P32 | 58.04.8103 | 10 k | 10% Trim-Pot. | |
| | P33 | 57.11.4223 | 22 k | | |
| | P34 | 57.11.6106 | 10 M | | |
| | P35 | 57.11.6106 | 10 M | | |
| | P36 | 57.11.3752 | 7,5 k | 1% | |
| | P37 | 57.11.3472 | 4,7 k | 1% | |
| | P38 | 57.11.3392 | 3,9 k | 1% | |
| | P39 | 57.11.3242 | 2,4 k | 1% | |
| | R40 | 57.11.4682 | 6,8 k | 2% | |
| | R41 | 57.11.4682 | 6,8 k | 2% | |
| | R42 | 57.11.4569 | 5,6 | 2% | |
| | R43 | 57.11.4223 | 22 k | | |
| | R44 | 57.11.4223 | 22 k | | |
| | R45 | 1.912.001.23 | 100 k | Lin. Pot. (Volume) | |
| | R46 | 57.11.4822 | 8,2 k | 2% | |
| | R47 | 57.11.4102 | 1 k | 2% | |
| | R48 | 57.11.4153 | 15 k | | |
| | R49 | 57.11.4104 | 100 k | | |
| | R50 | 57.11.4333 | 33 k | | |
| | R51 | 57.11.4391 | 390 | | |
| | R52 | 57.11.4105 | 1 M | | |
| | R53 | 57.11.4105 | 1 M | | |
| | R54 | 57.11.4334 | 330 k | | |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | 12.12.83 | A Hr sig | |
| 0 | 08-01-82 | sig | |

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 5 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R85 | 57.11.4272 | 2,7k | | |
| | R86 | 57.11.4683 | 68 k | | |
| | R87 | 57.11.4333 | 33 k | | |
| | R88 | 57.11.6106 | 10 M | | |
| | R89 | 57.11.4333 | 33 k | | |
| | R90 | 57.11.4683 | 68 k | | |
| | R91 | 57.11.6106 | 10 M | | |
| | R92 | 57.11.4105 | 1 M | | |
| | R93 | 57.11.4105 | 1 M | | |
| | R94 | 57.11.4103 | 10 k | | |
| | R95 | 57.11.4103 | 10 k | | |
| | R96 | 57.11.4273 | 27 k | | |
| | R97 | 57.11.4273 | 27 k | | |
| | R98 | 57.11.4104 | 100 k | | |
| | R99 | 58.04.82.03 | 20 k | 10% Trim-Pot. | |
| | R100 | 57.11.4182 | 1,8 k | | |
| | R101 | 57.11.4221 | 220 | | |
| | R102 | 57.11.4823 | 82 k | | |
| | R103 | 57.11.4223 | 22 k | | |
| | R104 | 57.11.4103 | 10 k | | |
| | R105 | 57.11.4104 | 100 k | | |
| | R106 | 57.11.4103 | 10 k | | |
| | R107 | 57.11.6335 | 3,3 M | | |
| | R108 | 57.11.6335 | 3,3 M | | |
| | R109 | 57.11.4102 | 1 k | | |
| | R110 | 57.11.4683 | 68 k | | |
| | R111 | 57.11.4153 | 15 k | | |
| | R112 | 57.11.4104 | 100 k | | |
| | R113 | 57.11.4333 | 33 k | | |
| | R114 | 57.11.4333 | 33 k | | |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | 12.12.83 | A Hr sig | |
| 0 | 08-01-82 | sig | |

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 7 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | C30 | 59.06.0104 | 100nF | PE 10% | |
| | C31 | 59.22.4101 | 100 µF | EL 16V | |
| | C32 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C33 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C34 | 59.22.4101 | 100 µF | EL 16V | |
| | C35 | 59.22.4221 | 220 µF | EL 16V | |
| | C36 | 59.22.4221 | 220 µF | EL 16V | |
| | D1 to D32 | 50.04.0125 | 1N4448 | or equivalent | any |
| | DL1 | 50.04.2111 | MV5053 | LED CM4-3343 | Mi,CM |
| | DL2 | 50.04.2121 | COYM11A | LED subminiature 3mm | T |
| | DL3 | 50.04.2121 | COYM11A | LED subminiature 3mm | T |
| | DL04 | 50.03.0126 | 4N26 | (4N28) | M,T1 |
| | DL02 | 50.03.0126 | 4N26 | (4N28) | M,T1 |
| | DL03 | 50.03.0126 | 4N26 | (4N28) | M,T1 |
| | IC1 | 50.08.0107 | RC4558 | | Ra,TI |
| | IC2 | 50.08.0107 | RC4558 | | Ra,TI |
| | IC3 | 50.08.0105 | NE5532 | XR5532 | Si,Ex |
| | IC4 | 50.08.0105 | NE5532 | XR5532 | Si,Ex |
| | IC5 | 50.08.0107 | RC4558 | | Ra,TI |
| | IC6 | 50.08.0105 | NE5532 | XR5532 | Si,Ex |
| | IC7 | 50.08.0107 | RC4558 | | Ra,TI |
| | IC8 | 50.08.0107 | RC4558 | | Ra,TI |
| | IC9 | 50.08.0105 | NE5532 | XR5532 | Si,Ex |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | CM Chicago Mic. |
| 3 | | | Ex Exar |
| 2 | | | M Motorola |
| 1 | 12.12.83 | A Hr sig | MS Mansanto |
| 0 | 08-01-82 | sig | Ra Raytheon |

Si Signetics
TI Texas Instr.

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 2 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | Q31 | 50.03.0545 | P-N-P | * | any |
| | Q32 | 50.03.0350 | J-N-FET | J442, MPF 4392 | Se,N,M |
| | Q33 | 50.03.0350 | J-N-FET | J442, MPF 4392 | Se,N,M |
| | Q34 | 50.03.0495 | N-P-N | BC419-16 or equivalent | any |
| | Q35 | 50.03.0540 | P-N-P | BC414-16 or equivalent | any |
| | R1 | 57.11.4682 | 6,8 k | 2% | |
| | R2 | 57.11.4682 | 6,8 k | 2% | |
| | R3 | 57.11.4682 | 6,8 k | 2% | |
| | R4 | 57.11.4682 | 6,8 k | 2% | |
| | R5 | 57.11.4273 | 27 k | | |
| | R6 | 57.11.6106 | 10 M | | |
| | R7 | 58.04.8103 | 10 k | 10% Trim-Pot. | |
| | R8 | 57.11.4182 | 1 k | | |
| | R9 | 57.11.4332 | 3,3 k | | |
| | R10 | 57.11.4102 | 1 k | | |
| | R11 | 58.04.8103 | 10 k | 10% Trim-Pot. | |
| | R12 | 57.11.4223 | 22 k | | |
| | R13 | 57.11.6106 | 10 M | | |
| | R14 | 57.11.6106 | 10 M | | |
| | R15 | 57.11.3752 | 7,5 k | 1% | |
| | R16 | 57.11.3472 | 4,7 k | 1% | |
| | R17 | 57.11.3392 | 3,9 k | 1% | |
| | R18 | 57.11.3242 | 2,4 k | 1% | |
| | R19 | 57.11.4682 | 6,8 k | 2% | |
| | R20 | 57.11.4682 | 6,8 k | 2% | |
| | R21 | 57.11.4569 | 5,6 | 2% | |
| | R22 | 57.11.4682 | 6,8 k | 2% | |
| | R23 | 57.11.4682 | 6,8 k | 2% | |
| | R24 | 57.11.4682 | 6,8 k | 2% | |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | 12.12.83 | A Hr sig | |
| 0 | 08-01-82 | sig | |

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 4 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R55 | 57.11.4683 | 6,8 | | |
| | R56 | 57.11.4105 | 1 M | | |
| | R57 | 57.11.4182 | 1,8 k | 2% | |
| | R58 | 57.11.4182 | 1,8 k | 2% | |
| | R59 | 58.04.8102 | 1 k | 10% Trim-Pot. | |
| | R60 | 57.11.4221 | 220 | | |
| | R61 | 58.04.8502 | 5 k | 10% Trim-Pot. | |
| | R62 | 57.11.4102 | 1 k | | |
| | R63 | 57.11.4123 | 12 k | 2% | |
| | R64 | 57.11.4123 | 12 k | 2% | |
| | R65 | 57.11.4223 | 22 k | 2% | |
| | R66 | 57.11.4223 | 22 k | 2% | |
| | R67 | 57.11.4153 | 15 k | 2% | |
| | R68 | 57.11.4682 | 6,8 k | | |
| | R69 | 57.11.4151 | 150 | | |
| | R70 | 57.11.4151 | 150 | | |
| | R71 | 57.11.4151 | 150 | | |
| | R72 | 57.11.3472 | 4,7 k | 2% | |
| | R73 | 57.11.4122 | 1,2 k | 2% | |
| | R74 | 57.11.4271 | 270 | | |
| | R75 | 57.11.4271 | 270 | | |
| | R76 | 57.11.4153 | 15 k | 2% | |
| | R77 | 57.11.4682 | 6,8 k | | |
| | R78 | 57.11.4151 | 150 | | |
| | R79 | 57.11.4151 | 150 | | |
| | R80 | 57.11.4151 | 150 | | |
| | R81 | 57.11.3472 | 4,7 k | 2% | |
| | R82 | 57.11.4122 | 1,2 k | 2% | |
| | R83 | 57.11.4271 | 270 | | |
| | R84 | 57.11.4271 | 270 | | |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | 12.12.83 | A Hr sig | |
| 0 | 08-01-82 | sig | |

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 6 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R115 | 57.11.4333 | 33 k | | |
| | R116 | 57.11.4272 | 2,7k | | |
| | R117 | 57.11.6106 | 10 M | | |
| | R118 | 57.11.4683 | 68 k | | |
| | R119 | 57.11.4334 | 330k | | |
| | R120 | 57.11.6106 | 10 M | | |
| | R121 | 57.11.4105 | 1 M | | |
| | R122 | 57.11.4105 | 1 M | | |
| | R123 | 57.11.4330 | 33 | | |
| | R124 | 57.11.3363 | 36 k | 2% | |
| | R125 | 57.11.4682 | 6,8 k | 2% | |
| | R126 | 57.11.4682 | 6,8 k | 2% | |
| | R127 | 57.11.4223 | 22 k | | |
| | R128 | 57.11.6106 | 10 M | | |
| | R129 | 57.11.4223 | 22 k | | |
| | R130 | 57.11.4222 | 2,2k | | |
| | R131 | 57.11.6106 | 10 M | | |
| | R132 | 57.11.4332 | 3,3k | | |
| | R140 | 57.11.3123 | 12 k | 1% | |
| | R141 | 57.11.3562 | 5,6k | 1% | |
| | R142 | 57.11.3123 | 12 k | 1% | |
| | R143 | 57.11.3562 | 5,6k | 1% | |
| | R144 | 57.11.4682 | 6,8k | 2% | |
| | R145 | 57.11.4682 | 6,8k | 2% | |
| | R146 | 57.11.4569 | 5,6 | 2% | |
| | R147 | 57.11.4122 | 1,2k | | |
| | R148 | 57.11.4272 | 2,7k | | |
| | R149 | 57.11.4272 | 2,7k | | |
| | R150 | 57.11.4101 | 100 | | |
| | R174 | 57.11.4272 | 2,7k | | |

| IND | DATE | NAME | |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | 12.12.83 | A Hr sig | |
| 0 | 08-01-82 | sig | |

STUDER Talk Back/Studio Monitor PL 1.912.320 PAGE 8 OF 10

## TALK BACK / STUDIO MONITOR 1.912.320.00 (also refer to 1.912.326.00)

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R482 | 57.11.4683 | 68k | | |
| | R473 | 57.11.4180 | 18 | | |
| | R474 | 57.11.4180 | 18 | | |
| | R475 | 57.11.4180 | 18 | | |
| | R476 | 57.11.4180 | 18 | | |
| | R477 | 57.11.4103 | 10 k | 2% | |
| | R478 | 57.11.4471 | 470 | 2% | |
| | R479 | 57.11.4471 | 470 | 2% | |
| | R480 | 57.11.4103 | 10 K | 2% | |
| | R481 | 57.11.4220 | 22 | 2% | |
| | R482 | 57.11.4220 | 22 | 2% | |
| | R483 | 57.11.4104 | 100 k | 2% | |
| | R484 | 57.11.4104 | 100 k | 2% | |
| | R485 | 1.912.004.25 | 47 k | Pot. pos log. (TB-Vol) | |
| | R486/7 | 1.912.004.34 | 2x 10k | Stereo Pot. pos. log. (PFL-Vol.) | |
| | R488 | 57.93.0209 | 56 | PTC Philips 2322.662.91005 | |
| | R489 | 57.93.0209 | 56 | PTC Philips 2322.662.91005 | |
| | R490 | 57.11.4105 | 1M | | |
| | S1 | 55.15.0007 | | Pushbutton switch (7 switches) | Sch |
| | S1-6 | 55.15.0102 | | Knob rdounless | Sch |
| | | 55.15.0105 | | Knob green | Sch |
| | | 55.15.0006 | | Pushbutton switch (6 switches) | Sch |
| | S2-7 | 55.15.0103 | | Knob red | Sch |
| | | 55.15.0104 | | Knob orange | Sch |
| | S8, S9 | 55.15.0012 | | Pushbutton switch, closing, mm latching | |
| | | 55.15.0123 | | Knob orange | |
| | S10 | 55.15.0003 | | Pushbutton switch | Sch |
| | | 55.03.0310 | | Knob wht | Sch |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | Sch Schadow ITT |
| ③ | | | |
| ② | | | |
| ① | 12.12.83 | A.Hor ag | |
| ○ | 08-04-82 | Hug | |

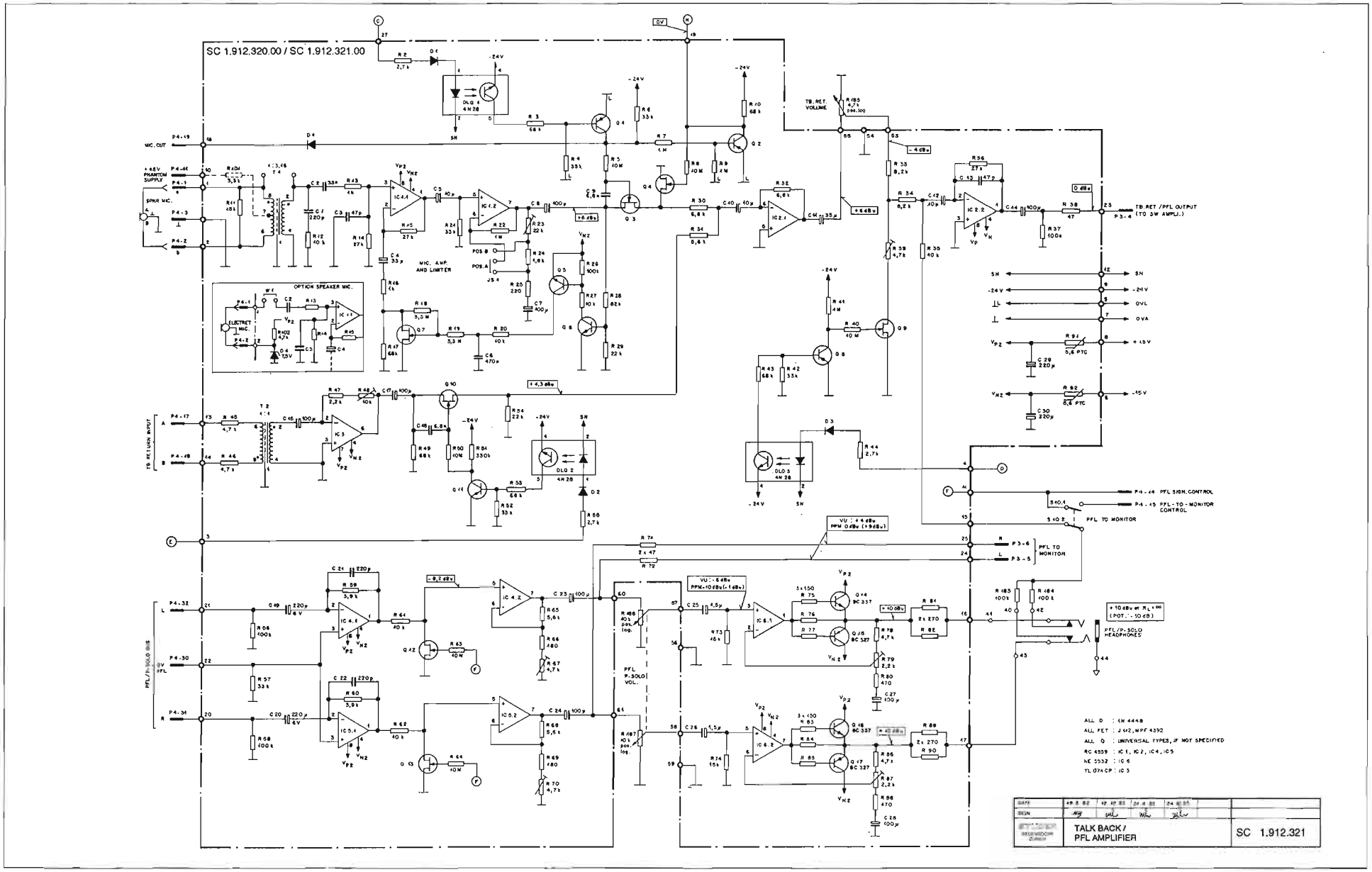
STUDER | Talk Back/Studio Monitor | PL 1.912.320 | PAGE 9 OF 10

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | T1 | 1.022.417.00 | 1:3,16 | Mic-trafo | Studer |
| | T2 | 1.022.352.00 | 1:1,7 | Output trafo | Studer |
| | T3 | 1.022.352.00 | 1:1,7 | Output trafo | Studer |
| | T4 | 1.022.352.00 | 1:1,7 | Output trafo | Studer |
| | VCA1 | 1.010.110.50 | | Voltage controlled ampl. | Studer |
| | VCA2 | 1.010.110.50 | | Voltage controlled ampl. | Studer |
| | J1 | 54.24.0103 | | Jack 6,3mm with switched contacts | |
| | J | 54.01.0020 | | Plugs for jumpers JSJ1, JSJ2 | |
| | JSJ | 54.04.0021 | | Jumper jack | |
| | P | 54.11.2007 | | Edge connector 16 pins | |
| | P | 54.04.0359 | | Edge connector 32 pins | |
| | XB | 55.15.0101 | | Lamp holder W2*4,6d | |
| | XIC | 53.03.0166 | | IC-Socket DIP 8 pins | |

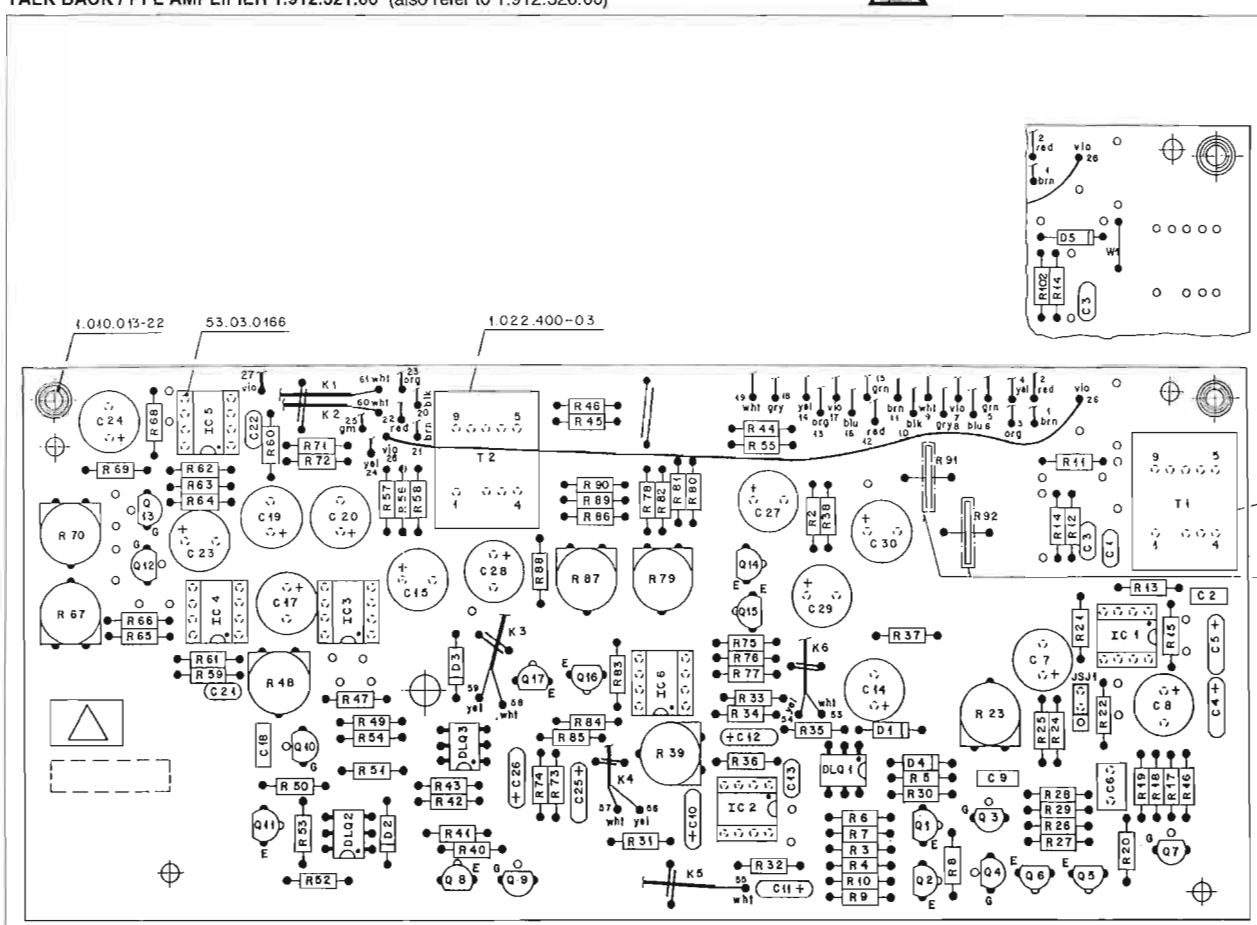
| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | 12.12.83 | A.Hor ag |
| ○ | 08-04-82 | Hug |

STUDER | Talk Back/Studio Monitor | PL 1.912.320 | PAGE 10 OF 10

## TALK BACK / PFL AMPLIFIER 1.912.321.00 (also refer to 1.912.326.00)



## TALK BACK / PFL AMPLIFIER 1.912.321.00 (also refer to 1.912.326.00)




OPTION ③
for Electret Mic.

1.022.400-03 ④

1.010.127-65 (2x) ④

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | C 1 | 59.34.4221 | 220 pF | CER 5% | |
| | C 2 | 59.06.0333 | 33 nF | PE 10% | |
| | C 3 | 59.34.2470 | 47 pF | CER 5% | |
| | C 4 | 59.26.1330 | 33 µF | SAL 10V | |
| | C 5 | 59.26.2100 | 10 µF | SAL 16V | |
| | C 6 | 59.06.0474 | 470 nF | PE 10% | |
| | C 7 | 59.22.4101 | 100 µF | EL 16V | |
| | C 8 | 59.22.4101 | 100 µF | EL 16V | |
| | C 9 | 59.06.0622 | 6,8 nF | PE 10% | |
| | C10 | 59.26.2100 | 10 µF | SAL 16V | |
| | C11 | 59.26.1330 | 33 µF | SAL 10V | |
| ② | C12 | 59.26.2100 | 10 µF | EL 16V | |
| | C13 | 59.34.2470 | 47 pF | CER 5% | |
| | C14 | 59.22.4101 | 100 µF | EL 16V | |
| | C15 | 59.22.4101 | 100 µF | EL 16V | |
| | C17 | 59.22.4101 | 100 µF | EL 16V | |
| | C18 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C19 | 59.22.2221 | 220 µF | EL 6V | |
| | C20 | 59.22.2221 | 220 µF | EL 6V | |
| | C21 | 59.34.4221 | 220 pF | CER 5% | |
| | C22 | 59.34.4221 | 220 pF | CER 5% | |
| | C23 | 59.22.4101 | 100 µF | EL 16V | |
| | C24 | 59.22.4101 | 100 µF | EL 16V | |
| | C25 | 59.26.5159 | 4,7 µF | SAL 25V | |
| | C26 | 59.26.5159 | 4,7 µF | SAL 25V | |
| | C27 | 59.22.4101 | 100 µF | EL 16V | |
| | C28 | 59.22.4101 | 100 µF | EL 16V | |
| | C29 | 59.22.4221 | 220 µF | EL 16V | |
| | C30 | 59.22.4221 | 220 µF | EL 16V | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | CER Ceramic |
| ③ | | | EL Electrolytic |
| ② | 18-04-95 | ang | PE Polyester |
| ① | 25-2-85 | ang | SAL Solid Aluminium Lacquered |
| ○ | 05-04-82 | ang | |

STUDER | Talk Back/PFL-Ampl. Board | PL | 1.912.324 | PAGE 1 OF 6

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | D1 | 50.04.0125 | 1N4448 | or equivalent | any |
| | D2 | 50.04.0125 | 1N4448 | or equivalent | any |
| | D3 | 50.04.0125 | 1N4448 | or equivalent | any |
| | D4 | 50.04.0125 | 1N4448 | or equivalent | any |
| | DLG1 | 50.99.0426 | 4N26 | (4N28) | M, TI |
| | DLG2 | 50.99.0426 | 4N26 | (4N28) | M, TI |
| | DLG3 | 50.99.0426 | 4N26 | (4N28) | M, TI |
| | IC1 | 50.09.0107 | RC4559 | | Ro, TI |
| | IC2 | 50.09.0107 | RC4559 | | Ro, TI |
| | IC3 | 50.09.0103 | TL071CP | LF351N | TI, N |
| | IC4 | 50.09.0107 | RC4559 | | Ro, TI |
| | IC5 | 50.09.0107 | RC4559 | | Ro, TI |
| | IC6 | 50.08.0105 | NE5532N | XR5532N | S, EX |
| | JSJ1 | 54.01.0024 | | jumper jack | |
| | Q1 | 50.03.0545 | P-N-P | * | any |
| | Q2 | 50.03.0545 | P-N-P | * | any |
| | Q3 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se, N, M |
| | Q4 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se, N, M |
| | Q5 | 50.03.0340 | N-P-N | * | any |
| | Q6 | 50.03.0545 | P-N-P | * | any |
| | Q7 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se, N, M |
| | Q8 | 50.03.0545 | P-N-P | * | any |
| | Q9 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se, N, M |
| | Q10 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se, N, M |
| | Q11 | 50.03.0545 | P-N-P | * | any |
| | Q12 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se, N, M |
| | Q13 | 50.03.0350 | J-N-FET | J442, MPF4392 | Se, N, M |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | Ex Exar Se Siliconix |
| ③ | | | M Motorola TI Texas Instr. |
| ② | 18-04-95 | ang | N National * Universal type A>460, U_BR>40V |
| ① | 25-2-85 | ang | Ra Raytheon |
| ○ | 05-04-82 | ang | Si Siliconix |

STUDER | Talk Back/PFL-Ampl. Board | PL | 1.912.324 | PAGE 2 OF 6

| | | | | | |
|---|---|---|---|---|---|
| 5.9.94 | Si | | | | ⑤ |
| 26.5.86 | A.Ho | | | | ④ |
| 1.11.84 | RBe | | | | ③ |
| 6.10.83 | A.Ho | | | | ② |
| 1.10.83 | A.Ho | | | | ① |
| 15.10.82 | A.Ho | | | | ○ |
| Datum | Ges. | Gepr. | Gen. | Index | |

Kopie für:

STUDER REGENSDORF ZÜRICH | Benennung: Talk Back / PFL-Ampl. Board ESE | Nummer: 1.912.321-00

## TALK BACK / PFL AMPLIFIER 1.912.321.00 (also refer to 1.912.326.00)

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | Q14 | 50.03.0340 | N-P-N | $I_C$ 800mA BC337-25 or equiv. | any |
| | Q15 | 50.03.0351 | P-N-P | $I_C$ 800mA BC327-25 or equiv | any |
| | Q16 | 50.03.0340 | N-P-N | $I_C$ 800mA BC337-25 or equiv. | any |
| | Q17 | 50.03.0351 | P-N-P | $I_C$ 800mA BC327-25 or equiv | any |
| | ... | | | | |
| | R2 | 57.11.4272 | 2,7 k | | |
| | R3 | 57.11.4683 | 68 k | | |
| | R4 | 57.11.4333 | 33 k | | |
| | R5 | 57.11.6106 | 10 M | | |
| | R6 | 57.11.4333 | 33 k | | |
| | R7 | 57.11.4105 | 1 M | | |
| | R8 | 57.11.6106 | 10M | | |
| | R9 | 57.11.4105 | 1 M | | |
| | R10 | 57.11.4683 | 68k | | |
| | R11 | 57.11.4153 | 15 k | | |
| | R12 | 57.11.4103 | 10k | | |
| | R13 | 57.11.4102 | 1k | | |
| | R14 | 57.11.4273 | 27k | | |
| | R15 | 57.11.4273 | 27k | | |
| | R16 | 57.11.4102 | 1 k | | |
| | R17 | 57.11.4683 | 68k | | |
| | R18 | 57.11.6335 | 3,3M | | |
| | R19 | 57.11.6335 | 3,3M | | |
| | R20 | 57.11.4103 | 10k | | |
| | R21 | 57.11.4333 | 33k | | |
| | R22 | 57.11.4105 | 1 M | | |
| | R23 | 58.02.5223 | 22 k | Trim-Pot. | |
| | R24 | 57.11.4182 | 1,8k | | |
| | R25 | 57.11.4221 | 220 | | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | 19-04-85 | wy |
| ① | 25-2-85 | wy |
| ○ | 05-01-82 | wy |

STUDER | Talk Back/PFL Ampl. Board | PL 1.912.321 | PAGE 3 OF 6

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R56 | 57.11.4104 | 100k | | |
| | R57 | 57.11.4333 | 33k | | |
| | R58 | 57.11.4104 | 100k | | |
| | R59 | 57.11.4392 | 3,9k | | |
| | R60 | 57.11.4392 | 3,9k | | |
| | R61 | 57.11.4103 | 10k | | |
| | R62 | 57.11.4103 | 10k | | |
| | R63 | 57.11.6106 | 10M | | |
| | R64 | 57.11.6106 | 10M | | |
| | R65 | 57.11.4562 | 5,6k | | |
| | R66 | 57.11.4181 | 180 | | |
| | R67 | 58.02.5472 | 4,7k | Trim-Pot. | |
| | R68 | 57.11.4562 | 5,6k | | |
| | R69 | 57.11.4181 | 180 | | |
| | R70 | 58.02.5472 | 4,7k | Trim-Pot. | |
| | R71 | 57.11.4470 | 47 | | |
| | R72 | 57.11.4470 | 47 | | |
| | R73 | 57.11.4153 | 15k | | |
| | R74 | 57.11.4153 | 15k | | |
| | R75 | 57.11.4151 | 150 | | |
| | R76 | 57.11.4151 | 150 | | |
| | R77 | 57.11.4151 | 150 | | |
| | R78 | 57.11.4472 | 4,7k | | |
| | R79 | 58.02.5222 | 2,2k | Trim-Pot | |
| | R80 | 57.11.4471 | 470 | | |
| | R81 | 57.11.4271 | 270 | | |
| | R82 | 57.11.4271 | 270 | | |
| | R83 | 57.11.4151 | 150 | | |
| | R84 | 57.11.4151 | 150 | | |
| | R85 | 57.11.4151 | 150 | | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | 19-04-85 | wy |
| ① | 25-02-85 | wy |
| ○ | 05-01-82 | wy |

STUDER | Talk Back/PFL-Ampl. Board | PL 1.912.321 | PAGE 5 OF 6

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R26 | 57.11.4104 | 100k | | |
| | R27 | 57.11.4103 | 10 k | | |
| | R28 | 57.11.4823 | 82 k | | |
| | R29 | 57.11.4223 | 22 k | | |
| | R30 | 57.11.4682 | 6,8 k | | |
| | R31 | 57.11.4562 | 5,6 k | | |
| | R32 | 57.11.4682 | 6,8 k | | |
| | R33 | 57.11.4822 | 8,2k | | |
| | R34 | 57.11.4822 | 8,2k | | |
| | R35 | 57.11.4103 | 10 k | | |
| | R36 | 57.11.4273 | 27 k | | |
| | R37 | 57.11.4104 | 100k | | |
| | R38 | 57.11.4470 | 47 | | |
| | R39 | 58.02.5472 | 4,7k | Trim-Pot | |
| | R40 | 57.11.6106 | 10 M | | |
| | R41 | 57.11.4105 | 1 M | | |
| | R42 | 57.11.4333 | 33 k | | |
| | R43 | 57.11.4683 | 68 k | | |
| | R44 | 57.11.4272 | 2,7k | | |
| | R45 | 57.11.4472 | 4,7 k | | |
| | R46 | 57.11.4472 | 4,7k | | |
| | R47 | 57.11.4222 | 2,2k | | |
| | R48 | 58.02.5103 | 10 k | Trim-Pot. | |
| | R49 | 57.11.4683 | 68 k | | |
| | R50 | 57.11.6106 | 10 M | | |
| | R51 | 57.11.4334 | 330k | | |
| | R52 | 57.11.4333 | 33k | | |
| | R53 | 57.11.4683 | 68k | | |
| | R54 | 57.11.4223 | 22k | | |
| | R55 | 57.11.4272 | 2,7k | | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | 19-04-85 | wy |
| ① | 25-02-85 | wy |
| ○ | 05-01-82 | wy |

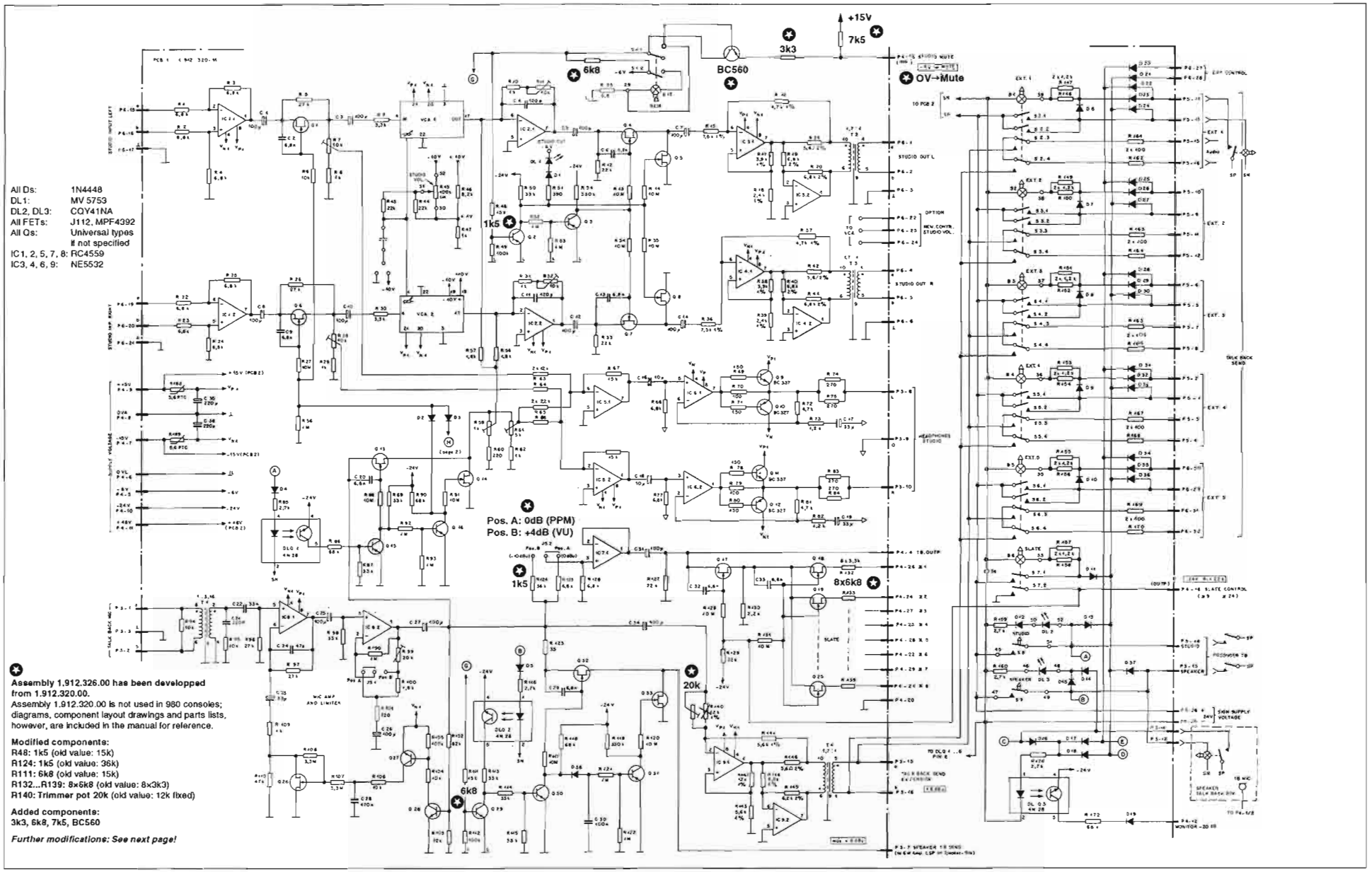
STUDER | Talk Back/PFL. Ampl. Board | PL 1.912.321 | PAGE 4 OF 6

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R86 | 57.11.4472 | 4,7k | | |
| | R87 | 58.02.5222 | 2,2k | Trim-Pot. | |
| | R88 | 57.11.4471 | 470 | | |
| | R89 | 57.11.4271 | 270 | | |
| | R90 | 57.11.4271 | 270 | | |
| | R91 | 57.99.0209 | 5,6 | PTC } Philips | |
| | R92 | 57.99.0209 | 5,6 | PTC } 2322.662.91005 | |
| | T1 | 1.022.417.00 | 1:3,16 | Mic-Trafo | Studer |
| | T2 | 1.022.405.00 | 1:1 | input-Trafo | Studer |
| | XIC | 53.03.01 66 | | IC-Socket, DIP 8pins | |
| | P | 5401.0020 | | Plug for Jumper JSJ1 / 2 ch. 11 | |
| | | OPTIONS | | | |
| | D5 | 50.04.1103 | | Zener, 7,5V, 400mW | any |
| | R101 | 57.11.4332 | 3,3k | | |
| | R102 | 57.11.4472 | 4,7k | | |
| | W1 | — | | wire conection on PCB | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | Änderungen |
| ③ | | | ④ Fehler im Text korrigiert |
| ② | 19-04-85 | wy | ② C42: 59.26.2100 wird neu 59.22.6100 |
| ① | 25-02-85 | wy | |
| ○ | 05-01-82 | wy | |

STUDER | Talk Back/PFL-Ampl. Board | PL 1.912.321 | PAGE 6 OF 6

## TALK BACK / STUDIO MONITOR 1.912.326.00



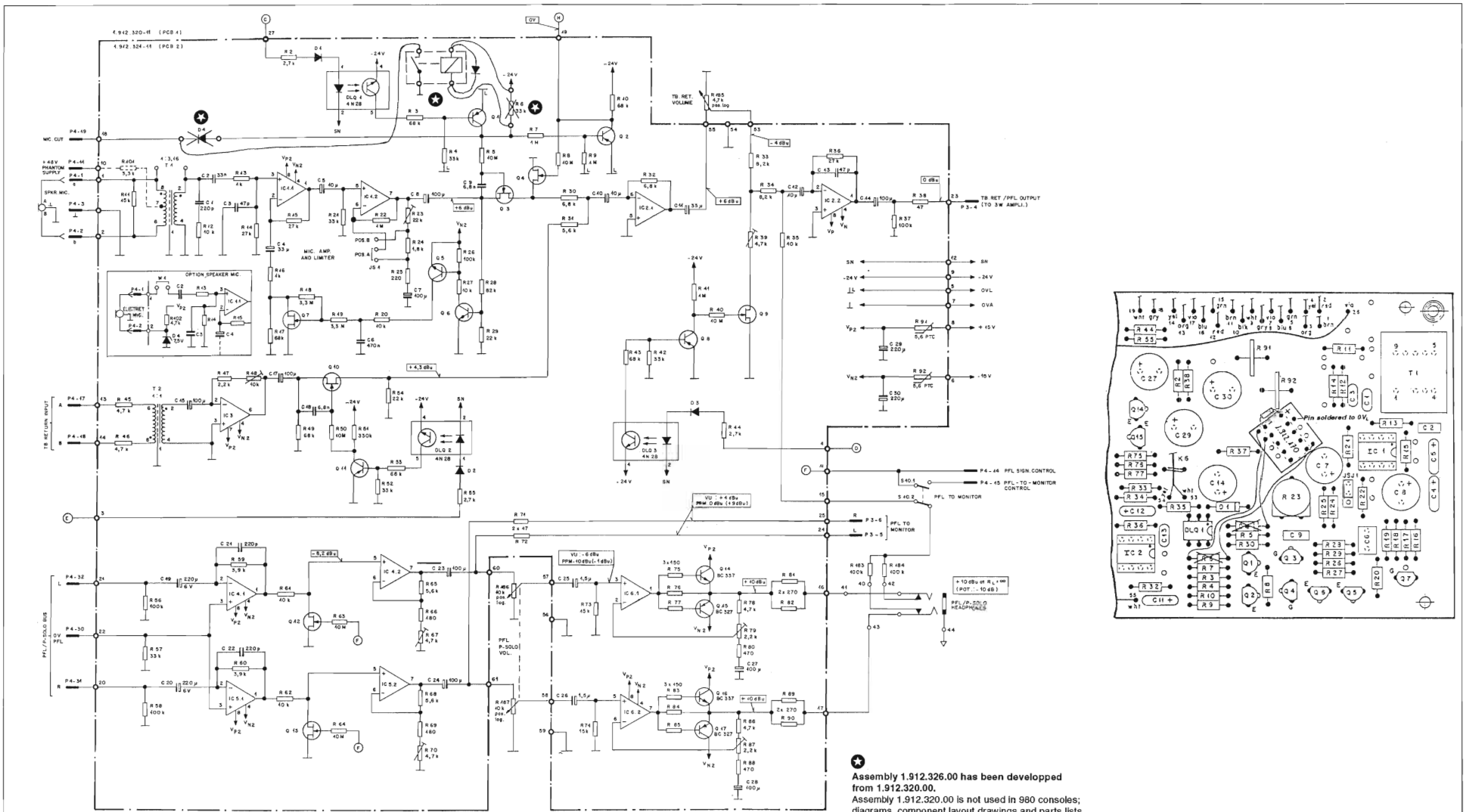

**Assembly 1.912.326.00 has been developped from 1.912.320.00.**
Assembly 1.912.320.00 is not used in 980 consoles; diagrams, component layout drawings and parts lists, however, are included in the manual for reference.

**Modified components:**
R48: 1k5 (old value: 15k)
R124: 1k5 (old value: 36k)
R111: 6k8 (old value: 15k)
R132...R139: 8x6k8 (old value: 8x3k3)
R140: Trimmer pot 20k (old value: 12k fixed)

**Added components:**
3k3, 6k8, 7k5, BC560

*Further modifications: See next page!*

## TALK BACK / STUDIO MONITOR 1.912.326.00







All Ds: 1N4448
All FETs: J112, MPF4392
All Qs: Universal types if not specified
IC1, 2, 4, 5: RC4559
IC6: NE5532
IC3: TL071CP

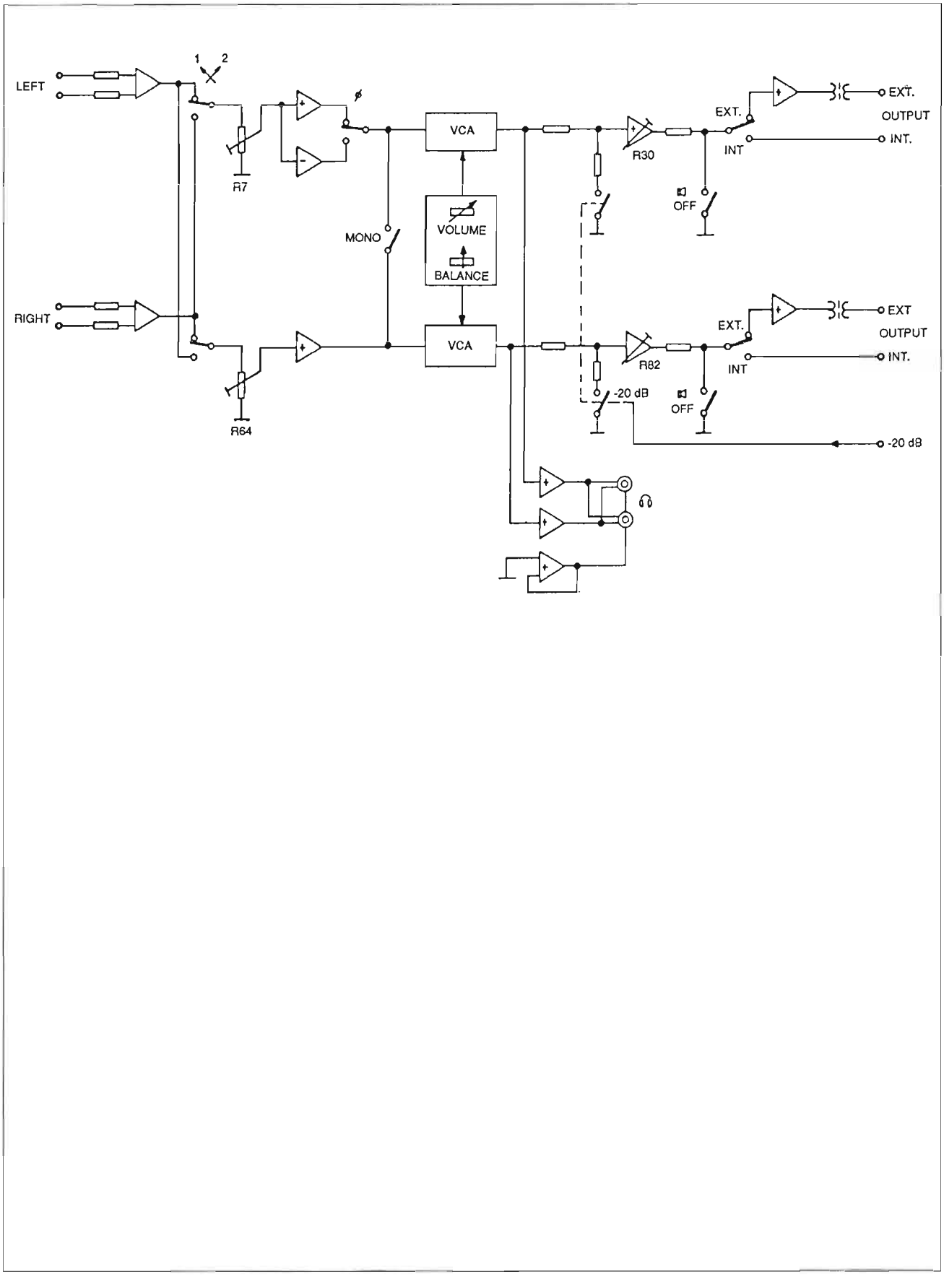
**Assembly 1.912.326.00 has been developped from 1.912.320.00.**
Assembly 1.912.320.00 is not used in 980 consoles; diagrams, component layout drawings and parts lists, however, are included in the manual for reference.

**Modified components:**
**R6: not used** (old value: 33k)
**D4: not used**

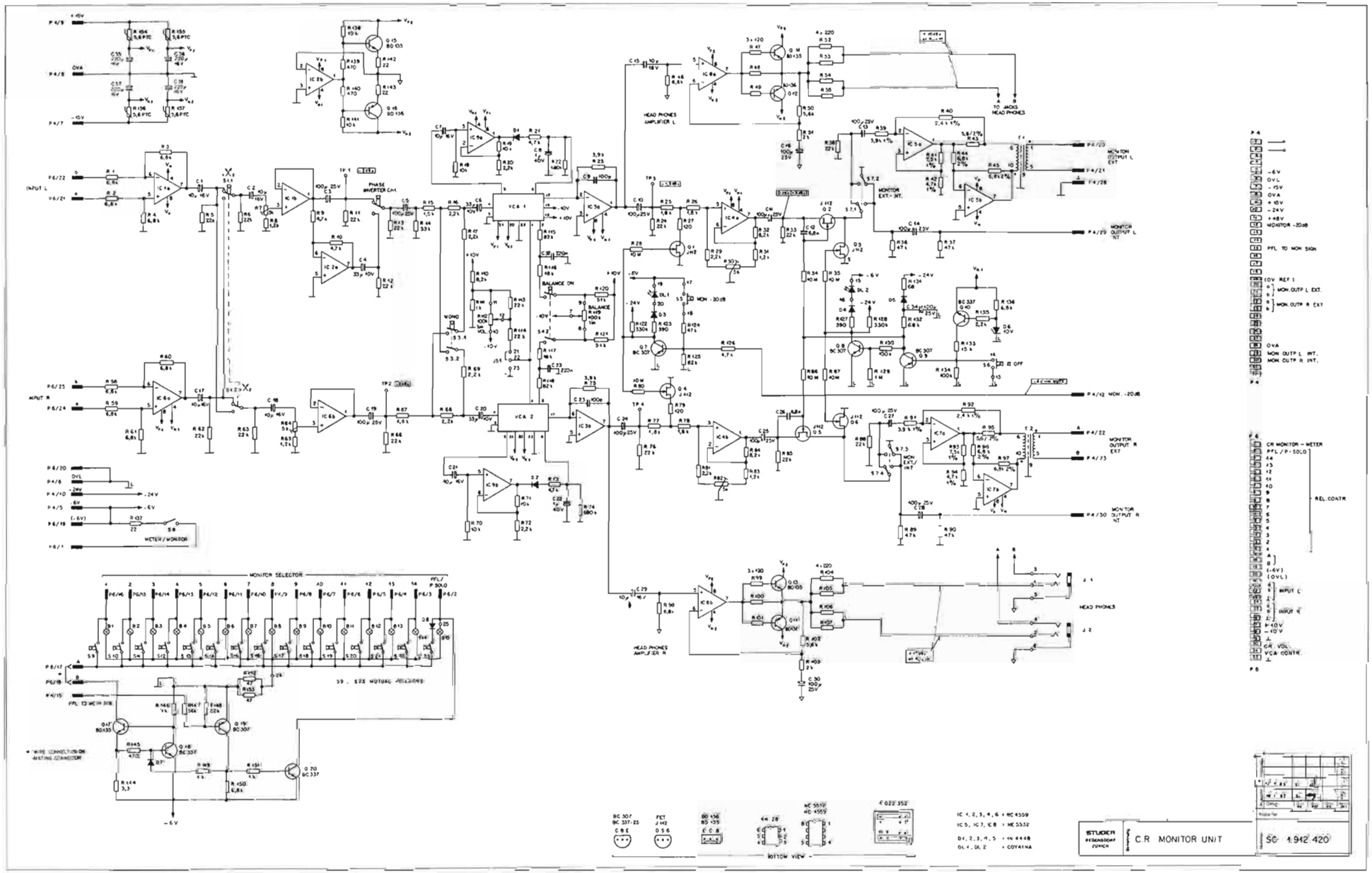
**Added components:**
**1N4448, Relay Board 1.912.170**

***Further modifications: See front page!***

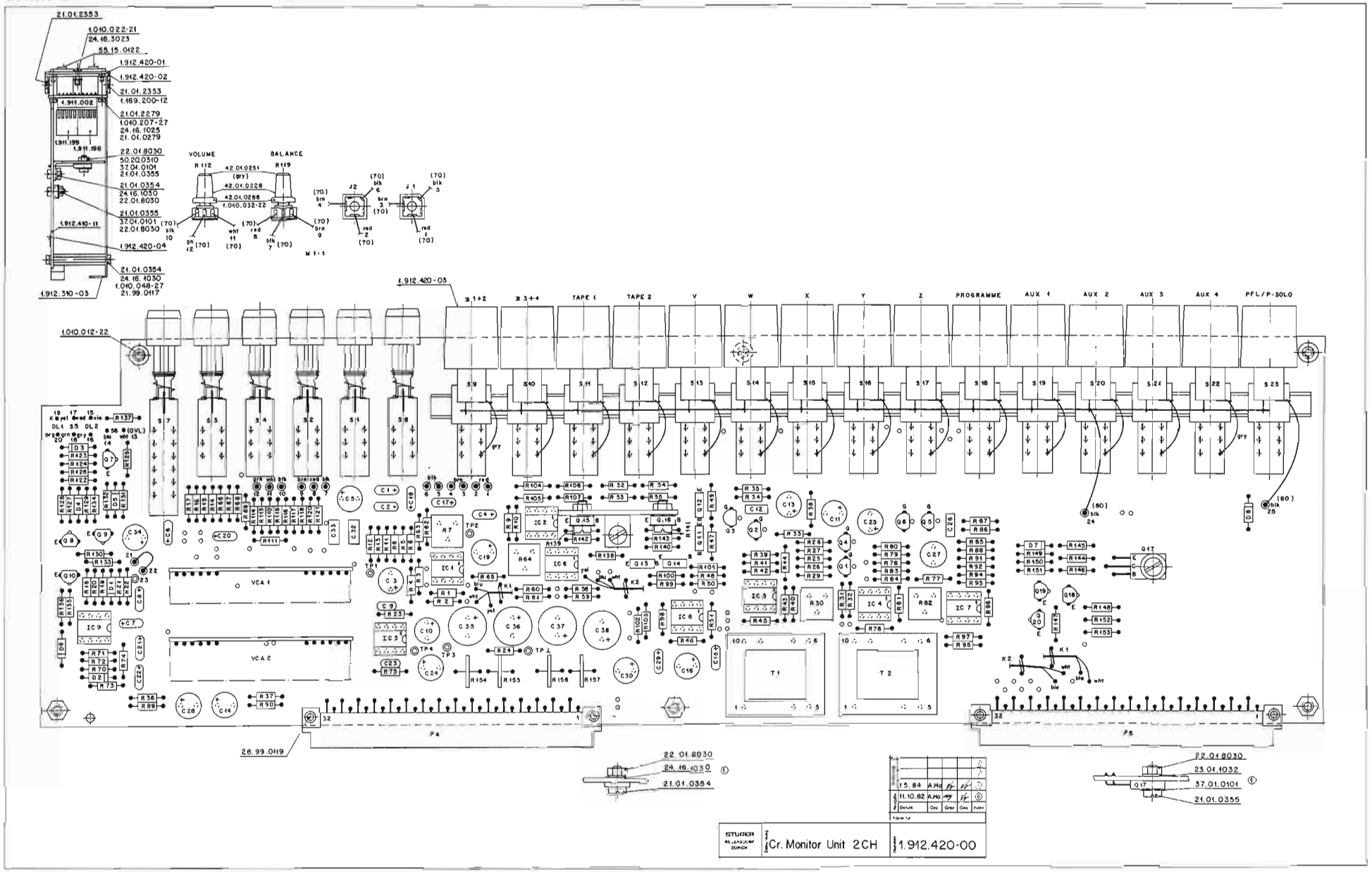
## BLOCK DIAGRAM
## CONTROL ROOM MONITOR UNIT 1.912.420



## CONTROL ROOM MONITOR UNIT 1.912.420.00



## CONTROL ROOM MONITOR UNIT 1.912.420.00



## CONTROL ROOM MONITOR UNIT 1.912.420.00

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | B1-B15 | 54.02.0144 | 6V 30mA | Lamp T1¾ | |
| | C 1 | 59.26.2100 | 10µF | SAL 16 V | |
| | C 2 | 59.26.2100 | 10µF | SAL 16 V | |
| | C 3 | 59.22.5101 | 100µF | EL 25V | |
| | C 4 | 59.26.1330 | 33µF | SAL 10V | |
| | C 5 | 59.22.5101 | 100µF | EL 25V | |
| | C 6 | 59.26.1330 | 33µF | SAL 10V | |
| | C 7 | 59.26.2100 | 10 µF | SAL 16V | |
| | C 8 | 59.26.9109 | 1 µF | SAL 40V | |
| | C 9 | 59.34.4101 | 100 pF | CER 5% | |
| | C 10 | 59.22.5101 | 100µF | EL 25V | |
| | C 11 | 59.22.5101 | 100µF | EL 25V | |
| | C 12 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C 13 | 59.22.5101 | 100µF | EL 25V | |
| | C 14 | 59.22.5101 | 100µF | EL 25V | |
| | C 15 | 59.26.2100 | 10µF | SAL 16V | |
| | C 16 | 59.22.5101 | 100µF | EL 25V | |
| | C 17 | 59.26.2100 | 10µF | SAL 16V | |
| | C 18 | 59.26.2100 | 10µF | SAL 16V | |
| | C 19 | 59.22.5101 | 100µF | EL 25V | |
| | C 20 | 59.26.1330 | 33µF | SAL 10V | |
| | C 21 | 59.26.2100 | 10µF | SAL 16V | |
| | C 22 | 59.26.9109 | 1µF | SAL 40V | |
| | C 23 | 59.34.4101 | 100 pF | CER 5% | |
| | C 24 | 59.22.5101 | 100µF | EL 25V | |
| | C 25 | 59.22.5101 | 100µF | EL 25V | |
| | C 26 | 59.06.0682 | 6,8 nF | PE 10% | |
| | C 27 | 59.22.5101 | 100µF | EL 25V | |
| | C 28 | 59.22.5101 | 100µF | EL 25V | |
| | C 29 | 59.26.2100 | 10µF | SAL 16V | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | EL ELECTROLYTIC |
| ③ | | | PE POLYESTER |
| ② | | | CER CERAMIC |
| ① | | | SAL SOLID ALUMINIUM LACQUERED |
| ○ | 04-01-82 | MW | |



| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | IC 5 | 50.09.0105 | NE5532N | XR5532N | Si, Ex |
| | IC 6 | 50.09.0107 | RC4559 | | Ra, TI |
| | IC 7 | 50.09.0105 | NE5532N | XR5532N | Si, Ex |
| | IC 8 | 50.09.0105 | NE5532N | XR5532N | Si, Ex |
| | IC 9 | 50.09.0107 | RC4559 | | Ra, TI |
| | | | | | |
| | J1 | 54.24.0103 | | Jack | |
| | J2 | 54.24.0103 | | Jack | |
| | J5J1,2 | 1.169.200.85 | | Jumper jack | |
| | P4 | 54.01.0359 | | Edge Connector 32p. | |
| | P6 | 54.01.0359 | | Edge Connector 32p. | |
| | | | | | |
| | Q 1 | 50.03.0350 | J-N-FET | | |
| | Q 2 | 50.03.0350 | J-N-FET | | |
| | Q 3 | 50.03.0350 | J-N-FET | | |
| | Q 4 | 50.03.0350 | J-N-FET | } J112F or MPF4392 | Sx, N, M |
| | Q 5 | 50.03.0350 | J-N-FET | | |
| | Q 6 | 50.03.0350 | J-N-FET | | |
| | Q 7 | 50.03.0515 | P-N-P | * | any |
| | Q 8 | 50.03.0515 | P-N-P | * | any |
| | Q 9 | 50.03.0515 | P-N-P | * | any |
| | Q 10 | 50.03.0340 | N-P-N | * | any |
| | Q 11 | 50.03.0495 | N-P-N | BD135-16 or equivalent | S, M, Pca |
| | Q 12 | 50.03.0510 | P-N-P | BD136-16 or equivalent | S, M, Pca |
| | Q 13 | 50.03.0495 | N-P-N | BD135-16 or equivalent | S, M, Pca |
| | Q 14 | 50.03.0510 | P-N-P | BD136-16 or equivalent | S, M, Pca |
| | Q 15 | 50.03.0495 | N-P-N | BD135-16 or equivalent | S, M, Pca |
| | Q 16 | 50.03.0510 | P-N-P | BD136-16 or equivalent | S, M, Pca |
| | Q 17 | 50.03.0495 | N-P-N | BD135-16 or equivalent | S, M, Pca |

| IND | DATE | NAME | | |
|---|---|---|---|---|
| ④ | | | Ex Exar | M Motorola |
| ③ | | | Si Signetics | Sx Siliconix |
| ② | | | Ra Raytheon | N National Semiconductors |
| ① | | | TI Texas Instruments | * universal type β>160 Ucbo>40V |
| ○ | 04-01-82 | MW | S Siemens | |



| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | C 30 | 59.22.5101 | 100µF | EL 25V | |
| | | | | | |
| | C32 | 59.06.0224 | 220nF | PE 10% | |
| | C33 | 59.06.0224 | 220nF | PE 10% | |
| | C34 | 59.22.5101 | 100µF | EL 25V | |
| | C35 | 59.22.4221 | 220µF | EL 16V | |
| | C36 | 59.22.4221 | 220µF | EL 16V | |
| | C37 | 59.22.4221 | 220µF | EL 16V | |
| | C38 | 59.22.4221 | 220µF | EL 16V | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | D 1 | 50.04.0125 | 1N4448 | or equivalent | |
| | D 2 | 50.04.0125 | 1N4448 | or equivalent | |
| | D 3 | 50.04.0125 | 1N4448 | or equivalent | |
| | D 4 | 50.04.0125 | 1N4448 | or equivalent | |
| | D 5 | 50.04.0125 | 1N4448 | or equivalent | |
| | D 6 | 50.04.1114 | 10V 10% | Zener Diode | |
| | D 7 | 50.04.0125 | 1N4448 | or equivalent | |
| | D 8 | 50.04.0125 | 1N4448 | or equivalent | |
| | | | | | |
| | | | | | |
| | DL1 | 50.04.2121 | CQY41NA | LED red | T |
| | DL2 | 50.04.2121 | CQY41NA | LED red | T |
| | | | | | |
| | IC 1 | 50.09.0107 | RC4559 | | Ra, TI |
| | IC 2 | 50.09.0107 | RC4559 | | Ra, TI |
| | IC 3 | 50.09.0107 | RC4559 | | Ra, TI |
| | IC 4 | 50.09.0107 | RC4559 | | Ra, TI |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | Ra Raytheon |
| ③ | | | TI Texas Instruments |
| ② | | | T Telefunken |
| ① | | | |
| ○ | 04-01-82 | MW | |



| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | Q 18 | 50.03.0340 | N-P-N | * | |
| | Q 19 | 50.03.0515 | P-N-P | * | |
| | Q 20 | 50.03.0340 | N-P-N | Ic: 800mA, BC337-25 or equiv. | any |
| | | | | | |
| | | | | | |
| | R 1 | 57.11.4682 | 6,8 k | 2% | |
| | R 2 | 57.11.4682 | 6,8 k | 2% | |
| | R 3 | 57.11.4682 | 6,8 k | 2% | |
| | R 4 | 57.11.4682 | 6,8 k | 2% | |
| | R 5 | 57.11.4223 | 22 k | | |
| | R 6 | 57.11.4223 | 22 k | | |
| | R 7 | 58.01.8502 | 5 k | 10% Trim-Pot | |
| | R 8 | 57.11.4122 | 1,2 k | | |
| | R 9 | 57.11.3472 | 4,7 k | 1% | |
| | R 10 | 57.11.3472 | 4,7 k | 1% | |
| | R 11 | 57.11.4223 | 22 k | | |
| | R 12 | 57.11.4223 | 22 k | | |
| | R 13 | 57.11.4223 | 22 k | | |
| | R 14 | 57.11.4333 | 33 k | | |
| | R 15 | 57.11.4152 | 1,5 k | 2% | |
| | R 16 | 57.11.4222 | 2,2k | 2% | |
| | R 17 | 57.11.4222 | 2,2k | 2% | |
| | R 18 | 57.11.4103 | 10 k | | |
| | R 19 | 57.11.4103 | 10 k | | |
| | R 20 | 57.11.4222 | 2,2k | | |
| | R 21 | 57.11.4472 | 4,7 k | | |
| | R 22 | 57.11.4684 | 680 k | | |
| | R 23 | 57.11.4392 | 3,9k | 2% | |
| | R 24 | 57.11.4223 | 22k | | |
| | R 25 | 57.11.4182 | 1,8k | 2% | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | | | |
| ○ | 04-01-82 | MW | |



## CONTROL ROOM MONITOR UNIT 1.912.420.00

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R26 | 57.11.4182 | 1,8 k | 2% | |
| | R27 | 57.11.4121 | 120 | | |
| | R28 | 57.11.6106 | 10 M | | |
| | R29 | 57.11.4222 | 2,2k | 5% | |
| | R30 | 58.11.8502 | 5 k | 10% Trim-Potm. | |
| | R31 | 57.11.4122 | 1,2k | 5% | |
| | R32 | 57.11.4822 | 8,2k | 5% | |
| | R33 | 57.11.4223 | 22k | | |
| | R34 | 57.11.6106 | 10M | | |
| | R35 | 57.11.6106 | 10M | | |
| | R36 | 57.11.4473 | 47k | | |
| | R37 | 57.11.4473 | 47k | | |
| | R38 | 57.11.4223 | 22k | | |
| | R39 | 57.11.3392 | 3,9k | 1% | |
| | R40 | 57.11.3242 | 2,4k | 1% | |
| | R41 | 57.11.3752 | 7,5k | 1% | |
| | R42 | 57.11.3472 | 4,7k | 1% | |
| | R43 | 57.11.4569 | 5,6 | 2% | |
| | R44 | 57.11.4682 | 6,8k | 2% | |
| | R45 | 57.11.4682 | 6,8k | 2% | |
| | R46 | 57.11.4682 | 6,8k | | |
| | R47 | 57.11.4121 | 120 | | |
| | R48 | 57.11.4121 | 120 | | |
| | R49 | 57.11.4121 | 120 | | |
| | R50 | 57.11.4562 | 5,6k | 2% | |
| | R51 | 57.11.3202 | 2,0k | 1% | |
| | R52 | 57.11.4221 | 220 | | |
| | R53 | 57.11.4221 | 220 | | |
| | R54 | 57.11.4221 | 220 | | |
| | R55 | 57.11.4221 | 220 | | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 04-01-82 | My |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 5 OF 9

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R86 | 57.11.6106 | 10 M | | |
| | R87 | 57.11.6106 | 10 M | | |
| | R88 | 57.11.4223 | 22 k | | |
| | R89 | 57.11.4473 | 47 k | | |
| | R90 | 57.11.4473 | 47 k | | |
| | R91 | 57.11.3392 | 3,9k | 1% | |
| | R92 | 57.11.3242 | 2,4k | 1% | |
| | R93 | 57.11.3752 | 7,5k | 1% | |
| | R94 | 57.11.3472 | 4,7k | 1% | |
| | R95 | 57.11.4569 | 5,6 | 2% | |
| | R96 | 57.11.4682 | 6,8k | 2% | |
| | R97 | 57.11.4682 | 6,8k | 2% | |
| | R98 | 57.11.4682 | 6,8k | | |
| | R99 | 57.11.4121 | 120 | | |
| | R100 | 57.11.4121 | 120 | | |
| | R101 | 57.11.4121 | 120 | | |
| | R102 | 57.11.4562 | 5,6k | 2% | |
| | R103 | 57.11.3202 | 2,0k | 1% | |
| | R104 | 57.11.4221 | 220 | | |
| | R105 | 57.11.4221 | 220 | | |
| | R106 | 57.11.4221 | 220 | | |
| | R107 | 57.11.4221 | 220 | | |
| | | | | | |
| | | | | | |
| | R110 | 57.11.4822 | 8,2k | 2% | |
| | R111 | 57.11.4102 | 1 k | 2% | |
| | R112 | 1.912.001.23 | 100k | Potm. Lin. (Volume) | |
| | R113 | 57.11.4223 | 22 k | | |
| | R114 | 57.11.4223 | 22k | | |
| | R115 | 57.11.4823 | 82k | 5% | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 04-01-82 | My |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 7 OF 9

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | R58 | 57.11.4682 | 6,8k | 2% | |
| | R59 | 57.11.4682 | 6,8k | 2% | |
| | R60 | 57.11.4682 | 6,8k | 2% | |
| | R61 | 57.11.4682 | 6,8k | 2% | |
| | R62 | 57.11.4223 | 22 k | | |
| | R63 | 57.11.4223 | 22k | | |
| | R64 | 58.01.8502 | 5k | 10% Trim-Potm. | |
| | R65 | 57.11.4122 | 1,2k | | |
| | R66 | 57.11.4223 | 22k | | |
| | R67 | 57.11.4152 | 1,5k | 2% | |
| | R68 | 57.11.4222 | 2,2k | 2% | |
| | R69 | 57.11.4222 | 2,2k | 2% | |
| | R70 | 57.11.4103 | 10 k | | |
| | R71 | 57.11.4103 | 10 k | | |
| | R72 | 57.11.4222 | 2,2k | | |
| | R73 | 57.11.4472 | 4,7k | | |
| | R74 | 57.11.4684 | 680k | | |
| | R75 | 57.11.4392 | 3,9k | 2% | |
| | R76 | 57.11.4223 | 22 k | | |
| | R77 | 57.11.4152 | 1,5 k | | |
| | R78 | 57.11.4182 | 1,8 k | 2% | |
| | R79 | 57.11.4121 | 120 | | |
| | R80 | 57.11.6106 | 10 M | | |
| | R81 | 57.11.4222 | 2,2k | 5% | |
| | R82 | 58.01.8502 | 5k | 10% Trim-Potm. | |
| | R83 | 57.11.4122 | 1,2k | 5% | |
| | R84 | 57.11.4822 | 8,2k | 5% | |
| | R85 | 57.11.4223 | 22k | | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 04-01-82 | My |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 6 OF 9

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R116 | 57.11.4183 | 18 k | 5% | |
| | R117 | 57.11.4183 | 18 k | 5% | |
| | R118 | 57.11.4823 | 82k | 5% | |
| | R119 | 1.912.001.23 | 100 k | Potm. Lin. (Balance) | |
| | R120 | 57.11.3513 | 51k | 1% | |
| | R121 | 57.11.3513 | 51k | 1% | |
| | R122 | 57.11.4334 | 330k | | |
| | R123 | 57.11.4391 | 390 | | |
| | R124 | 57.11.4473 | 47k | | |
| | R125 | 57.11.4823 | 82k | | |
| | R126 | 57.11.4472 | 4,7k | | |
| | R127 | 57.11.4391 | 390 | | |
| | R128 | 57.11.4334 | 330k | | |
| | R129 | 57.11.4105 | 1 M | | |
| | R130 | 57.11.4104 | 100 k | | |
| | R131 | 57.11.4680 | 68 | | |
| | R132 | 57.11.4683 | 68 k | | |
| | R133 | 57.11.4153 | 15k | | |
| | R134 | 57.11.4104 | 100k | | |
| | R135 | 57.11.4222 | 2,2k | | |
| | R136 | 57.11.4682 | 6,8k | | |
| | R137 | 57.11.4220 | 22 | | |
| | R138 | 57.11.4103 | 10 k | | |
| | R139 | 57.11.4471 | 470 | | |
| | R140 | 57.11.4471 | 470 | | |
| | R141 | 57.11.4103 | 10 k | | |
| | R142 | 57.11.4220 | 22 | | |
| | R143 | 57.11.4220 | 22 | | |
| | R144 | 57.11.4339 | 3,3 | | |
| | R145 | 57.11.4471 | 470 | | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 04-01-82 | My |

STUDER C.R. MONITOR UNIT 2CH PL 1.912.420 PAGE 8 OF 9

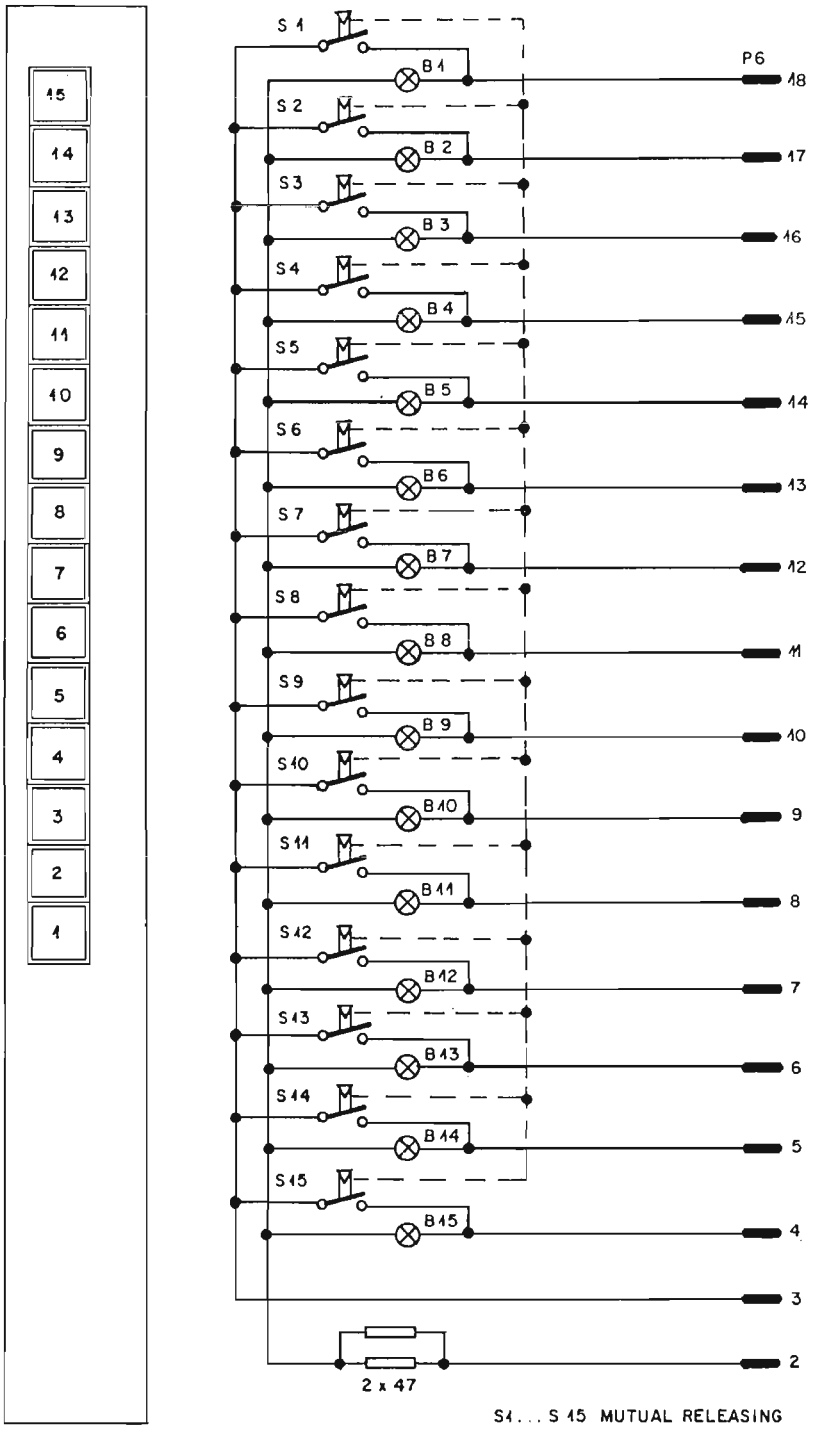
## CONTROL ROOM MONITOR UNIT 1.912.420.00

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R146 | 57.11.4102 | 1 k | | |
| | R147 | 57.11.4563 | 56 k | | |
| | R148 | 57.11.4223 | 22k | | |
| | R149 | 57.11.4102 | 1 k | | |
| | R150 | 57.11.4682 | 6,8k | | |
| | R151 | 57.11.4102 | 1k | | |
| | R152 | 57.11.4470 | 47 | | |
| | R153 | 57.11.4470 | 47 | | |
| | R154 | 57.99.0209 | 5,6 | PTC | |
| | R155 | 57.99.0209 | 5,6 | PTC Philips | |
| | R156 | 57.99.0209 | 5,6 | PTC 2322.662.31005 | |
| | R157 | 57.99.0209 | 5,6 | PTC | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | S1 | 55.15.0003 | 2u, Au | | |
| | S2 | 55.15.0003 | 2u, Au | | |
| | S3 | 55.15.0003 | 2u, Au | | |
| | S4 | 55.15.0003 | 2u, Au | | |
| | S5 | 55.15.0113 | 1u | | |
| | S6 | 55.15.0113 | 1u | | |
| | S7 | 55.15.0004 | 4u, Au | | |
| | S8 | 55.15.0002 | 2u Ag | | |
| | S9-S23 | 55.15.0008 | 15x2u, Au | | |
| | | | | | |
| | T1,T2 | 1.022.352.00 | 1,7 : 1 | Output Trafo | Studer |
| | VCA1,2 | 1.010.110.50 | | Voltage Controlled Ampl. | Studer |
| | XB | 55.15.0101 | W2*4,6D | Lamp Holder | |
| | XIC | 53.03.0166 | DIP 8p | IC-Socket 8 pins | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 04-01-82 | MG |

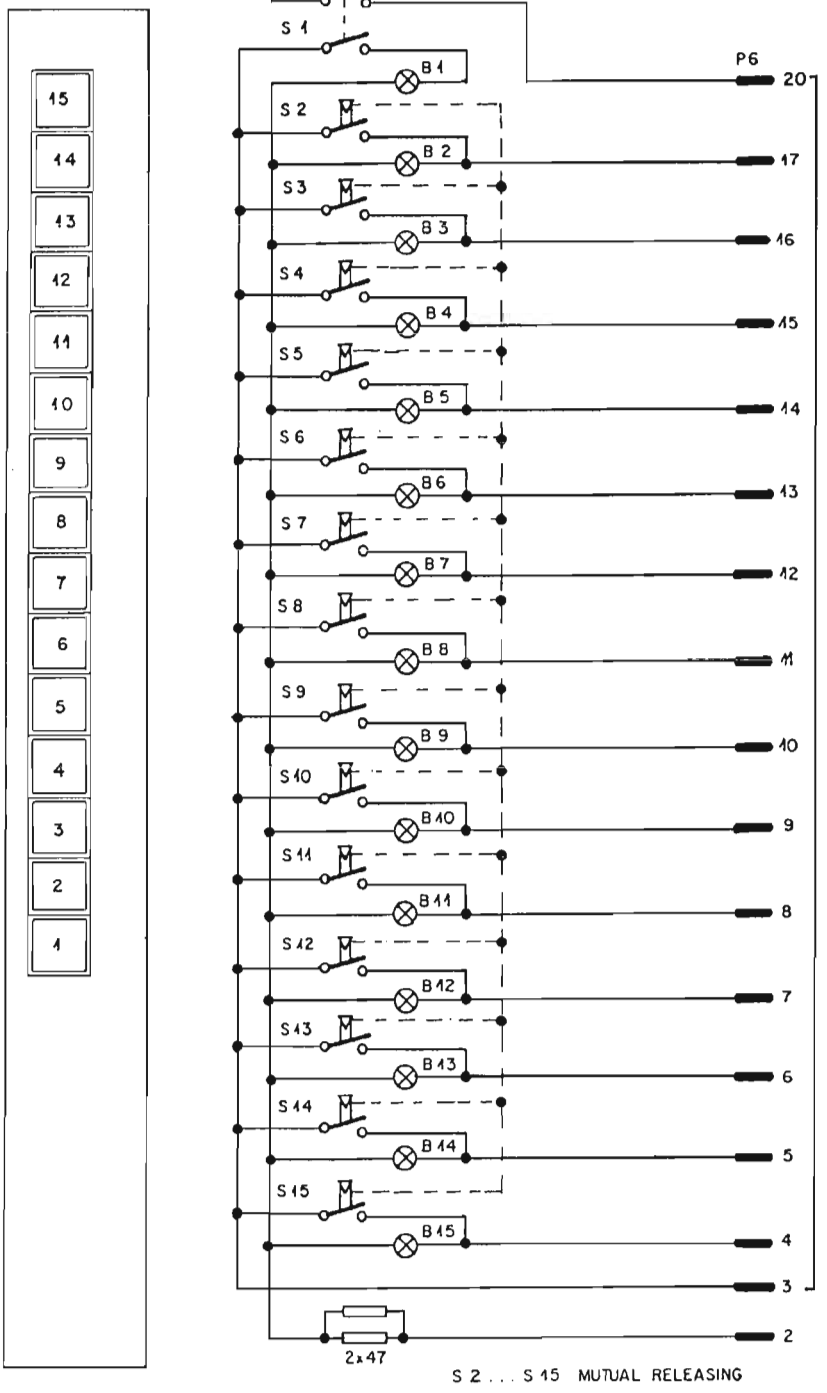
| STUDER | C.R. MONITOR UNIT 2CH | PL | 1.912.420 | PAGE 9 OF 9 |
|---|---|---|---|---|

## AUXILIARY MONITOR SELECTOR 1.912.460.00




| | | | | | | |
|---|---|---|---|---|---|---|
| DATE: | 31. 5. 83 | | | | | |
| SIGN: | We | | | | | |
| STUDER REGENSDORF ZÜRICH | AUX MONITOR | | | | | SC 1.912.460 |

## AUXILIARY MONITOR SELECTOR 1.912.460.81




| | | | | | | |
|---|---|---|---|---|---|---|
| DATE: | 11.10.83 | | | | | |
| SIGN: | Ge | | | | | |
| STUDER REGENSDORF ZÜRICH | AUX MONITOR | | | | | SC 1.912.460.81 |

# Schemata / Circuit Diagrams

## Signalling/Indication

Circuit diagrams, component layouts, and parts lists:


* Autostart Interface Stop Watch ..... 1.910.302.00
* Correlator (30 LED) 4 Ch ..... 1.913.100.00
* 1 Ch PPM (30 LED) ..... 1.913.101.00
* 1 Ch VU (30 LED) ..... 1.913.102.00
* 1 Ch PPM (30 LED) w. GRM ..... 1.913.103.00
* 1 Ch VU (30 LED) w. GRM ..... 1.913.104.00
* 2 Ch PPM (30 LED) ..... 1.913.105.00
* 2 Ch VU (30 LED) ..... 1.913.106.00
* 2 Ch PPM (30 LED) w. GRM ..... 1.913.107.00
* 2 Ch VU (30 LED) w. GRM ..... 1.913.108.00
* Correlator (30 LED) 2 Ch ..... 1.913.109.00
* Dual Bar Graph PPM w. GRM ..... 1.913.111.81
* Dual Bar Graph VU-Meter w. GRM ..... 1.913.112.81

Signalling/Indication Unit ..... 1.913.142.00
- Switch Board ..... 1.913.140.22

Audio Generator ..... 1.913.150.81

* Compressor/Limiter/Noise Gate ..... 1.913.155.00
* Low-/Highpass Filter 24 dB/Oct. ..... 1.913.157.00

PFL Loudspeaker ..... 1.913.200.00

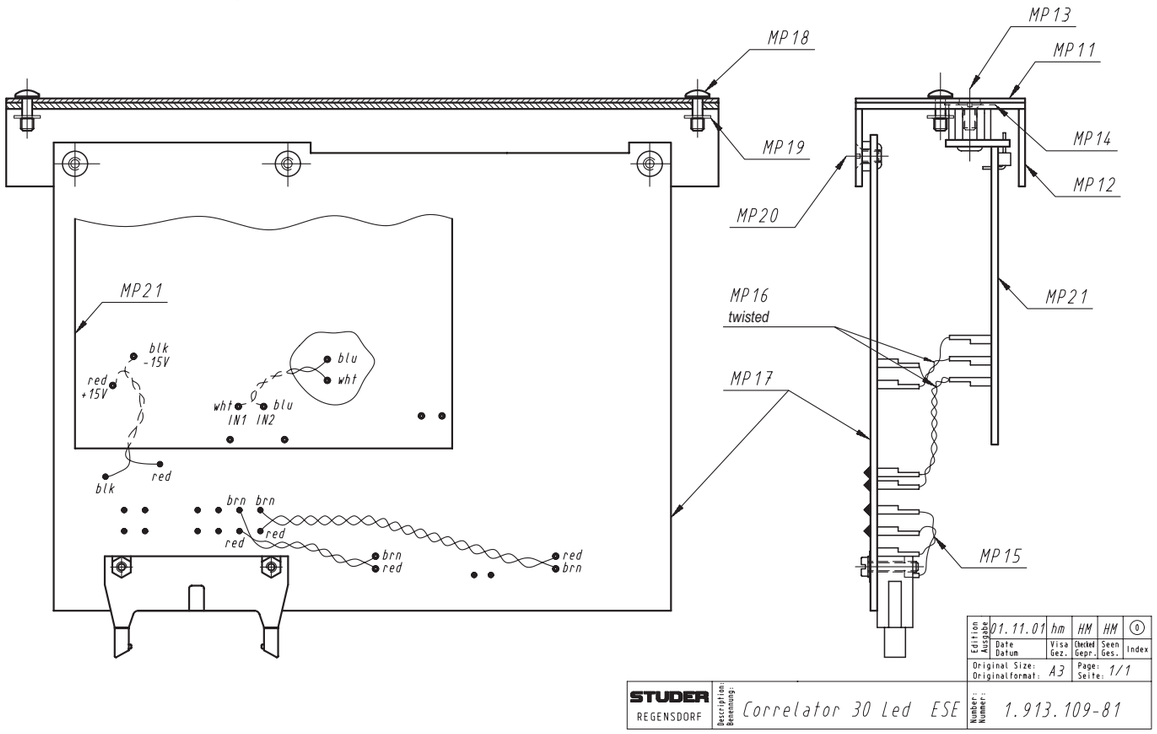
* Correlator 2 Ch ..... 1.913.210.00
* Correlator 4 Ch ..... 1.913.211.00
* Peak Progr. Meter ..... 1.913.220.00
* Peak Progr. Meter w. GRM ..... 1.913.221.00
* VU-Meter ..... 1.913.230.00


* This information is supplied according to the customer's requirements
* Diese Informationen werden kundenspezifisch bestückt

* VU-Meter w. GRM ..... 1.913.231.00
* Stop Watch ..... 1.913.310.81
* 4 Ch PPM (30 LED) ..... 1.913.321.00
* 4 Ch VU-Meter (30 LED) ..... 1.913.322.00
* 4 Ch PPM (30 LED) w. GRM ..... 1.913.323.00
* 4 Ch VU-Meter (30 LED) w. GRM ..... 1.913.324.00
* 8 Ch Bar Graph PPM w. GRM ..... 1.913.411.81
* 8 Ch Bar Graph VU-Meter w. GRM ..... 1.913.412.81
* Tape Remote Control ..... 1.913.503.00
* Dynamics Unit Lim/Comp/Noise Gate ..... 1.990.510.00
* 4 Ch VFD Bar Graph Mono + Bus ..... 1.990.620.00
* 4 Ch VFD Bar Graph Stereo + Bus ..... 1.990.621.00

* This information is supplied according to the customer's requirements
* Diese Informationen werden kundenspezifisch bestückt

## Correlator 30 LED, 2-CH 1.913.109.81 ( 0) / 4-CH 1.913.100.81 ( 0)




## Correlator 30 LED, 2-CH 1.913.109.81 ( 0)

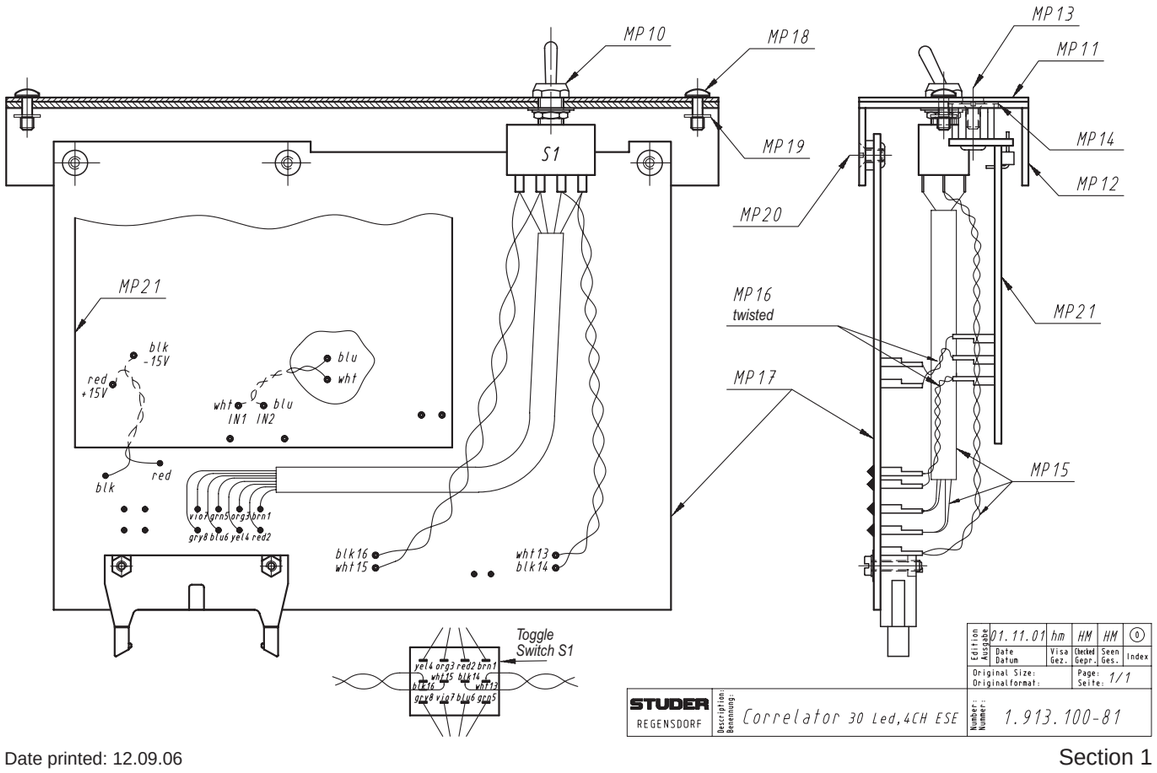


| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | MP 9 | 1.913.109.04 | 1 pce | | STUDER-NR.-ETIKETTE 10 * 20 |
| 0 | MP 11 | 1.913.010.41 | 1 pce | | FRONTSCHILD 1E 30LED CORR.2CH |
| 0 | MP 12 | 1.913.010.40 | 1 pce | | TRAEGER 1E 30LED CORRELATOR |
| 0 | MP 13 | 21.99.0175 | 2 pcs | M3*6 | S-Schraube IS A2 sw oxydiert |
| 0 | MP 14 | 1.913.136.03 | 1 pce | | FENSTER BUS SELECTOR +VU |
| 0 | MP 15 | 1.913.212.93 | 1 pce | | LL KORRELATOR 2CH |
| 0 | MP 16 | 1.913.109.93 | 1 pce | | LL CORRELATOR 30 LED |
| 0 | MP 17 | 1.913.212.00 | 1 pce | | CORRELATOR BOARD ,A |
| 0 | MP 18 | 24.16.3023 | 2 pcs | 2.3 | Wellensicherung |
| 0 | MP 19 | 1.010.022.21 | 2 pcs | M3*8 | L-Schraube IS sw spezial |
| 0 | MP 20 | 21.01.2353 | 3 pcs | M3*5 | S - Schraube Zn bl chr |
| 0 | MP 21 | 1.913.095.00 | 1 pce | | CORRELATOR 30LED 2CH ,A |

End of List

**Comments:**

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|




## Correlator 30 LED, 4-CH 1.913.100.81 ( 0)



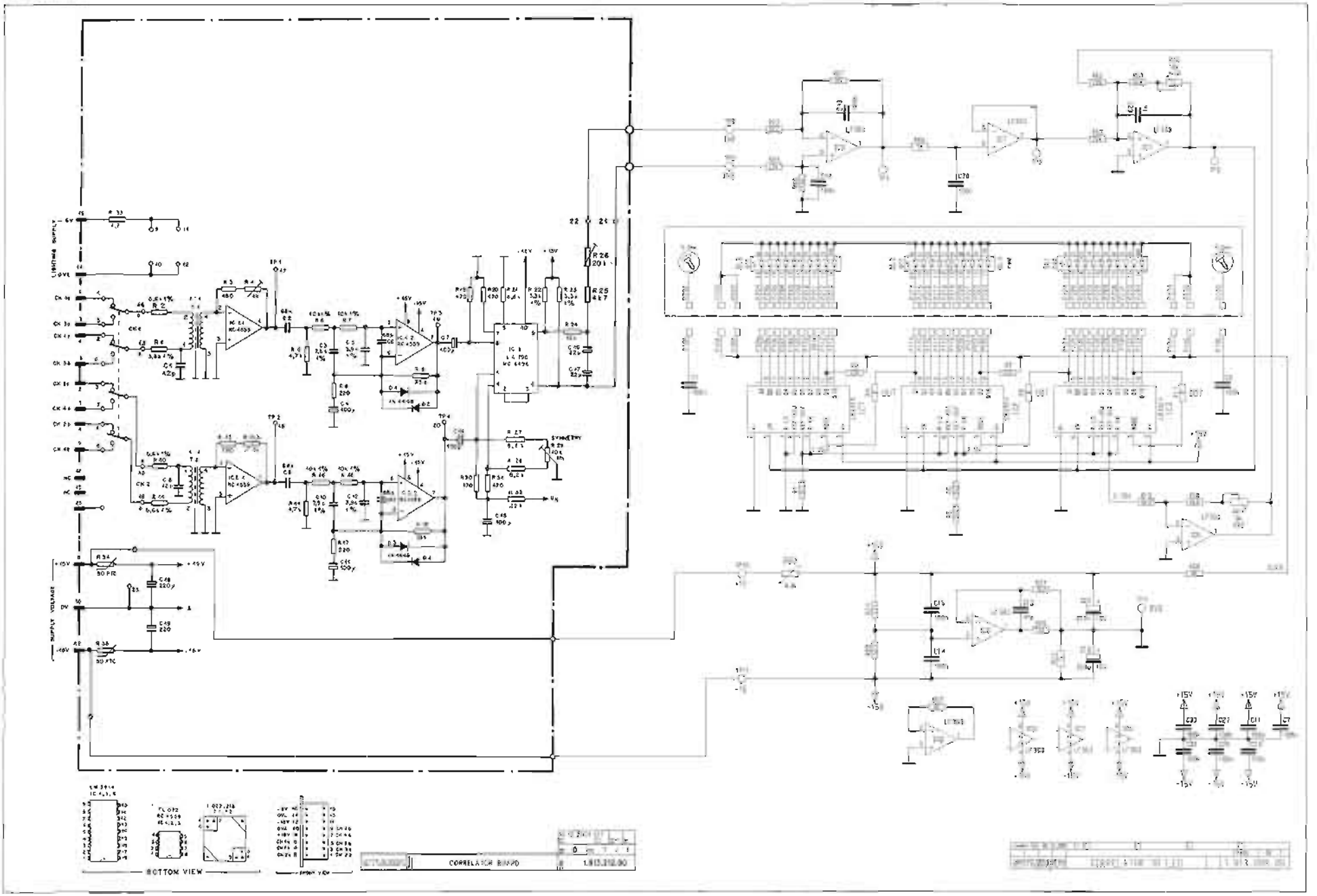
| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | MP 9 | 1.913.100.04 | 1 pce | | STUDER-NR.-ETIKETTE 10 * 20 |
| 0 | MP 10 | 1.010.031.22 | 1 pce | 1/4*40NS | Abdeck-Mutter Ms Ni |
| 0 | MP 11 | 1.913.010.42 | 1 pce | | FRONTSCHILD 1E 30LED CORR.4CH |
| 0 | MP 12 | 1.913.010.40 | 1 pce | | TRAEGER 1E 30LED CORRELATOR |
| 0 | MP 13 | 21.99.0175 | 2 pcs | M3*6 | S-Schraube IS A2 sw oxydiert |
| 0 | MP 14 | 1.913.136.03 | 1 pce | | FENSTER BUS SELECTOR +VU |
| 0 | MP 15 | 1.913.211.93 | 1 pce | | LL KORRELATOR 4CH |
| 0 | MP 16 | 1.913.109.93 | 1 pce | | LL CORRELATOR 30 LED |
| 0 | MP 17 | 1.913.212.00 | 1 pce | | CORRELATOR BOARD ,A |
| 0 | MP 18 | 24.16.3023 | 2 pcs | 2.3 | Wellensicherung |
| 0 | MP 19 | 1.010.022.21 | 2 pcs | M3*8 | L-Schraube IS sw spezial |
| 0 | MP 20 | 21.01.2353 | 3 pcs | M3*5 | S - Schraube Zn bl chr |
| 0 | MP 21 | 1.913.095.00 | 1 pce | | CORRELATOR 30LED 2CH ,A |
| 0 | S 1 | 55.01.0115 | 1 pce | 4*on-none-on | Kippschalter Ag |

End of List

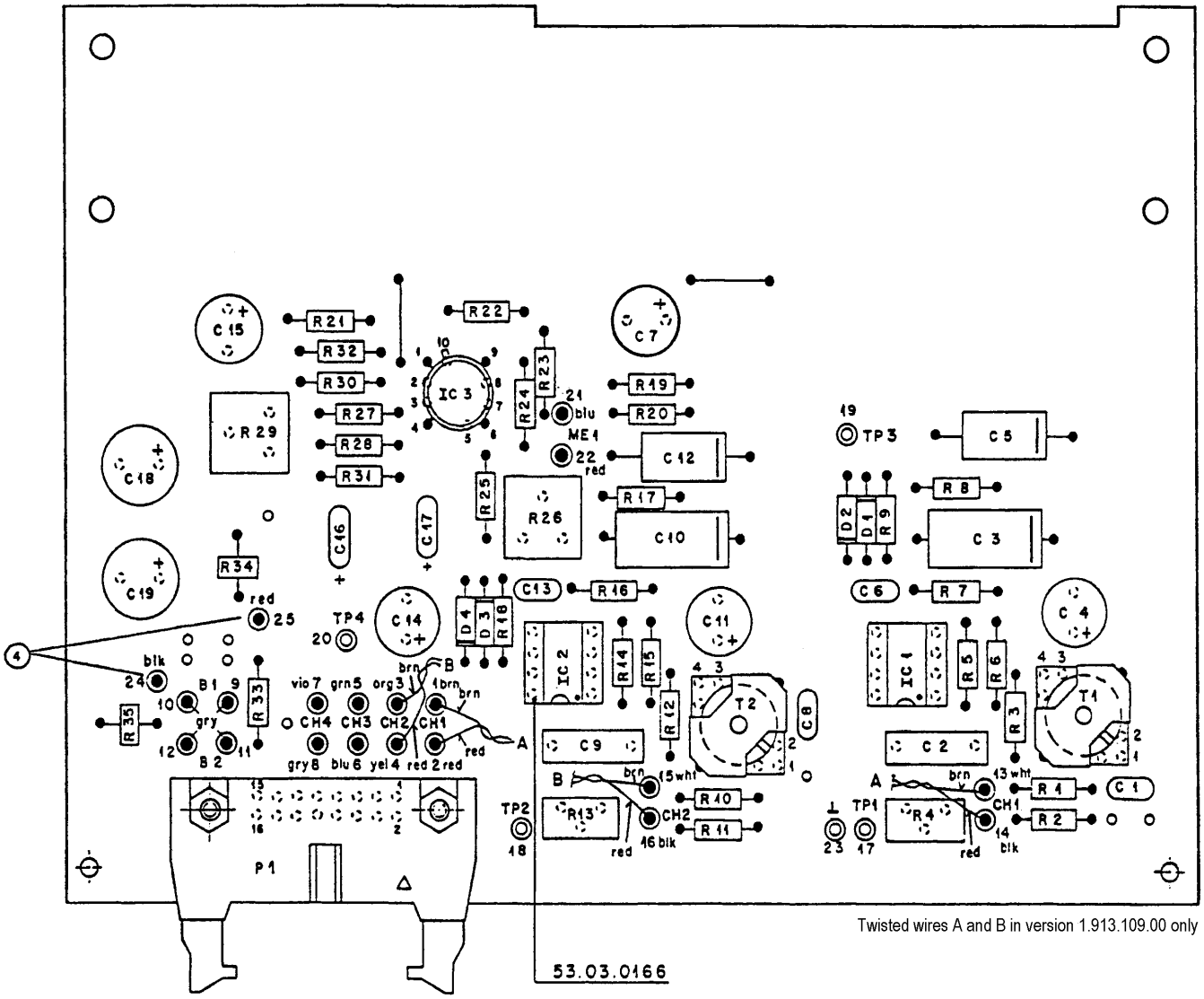
**Comments:**

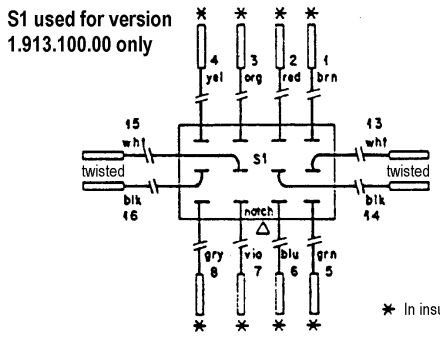
| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|

Correlator 4CH 30 LED 1.913.100
Correlator 2CH 30 LED 1.913.109



## Correlator PCB 1.913.212.00 ( 4)




| Ausgabe | Datum | Gez. | Gepr. | Gen. | Index |
|---|---|---|---|---|---|
| Änderung | 30.11.88 A.Hö | | | | 4 |
| | 12.11.86 A.Ho | | | | 3 |
| | 10.12.84 A.Ho | | | | 2 |
| | 4.1.84 A.Ho | | | | 1 |
| | 9.2.83 A.Ho | | | | 0 |

STUDER REGENSDORF ZÜRICH | Benennung: CORRELATOR BOARD | Nummer: 1.913.212

# Correlator PCB 1.913.212.00 ( 0)



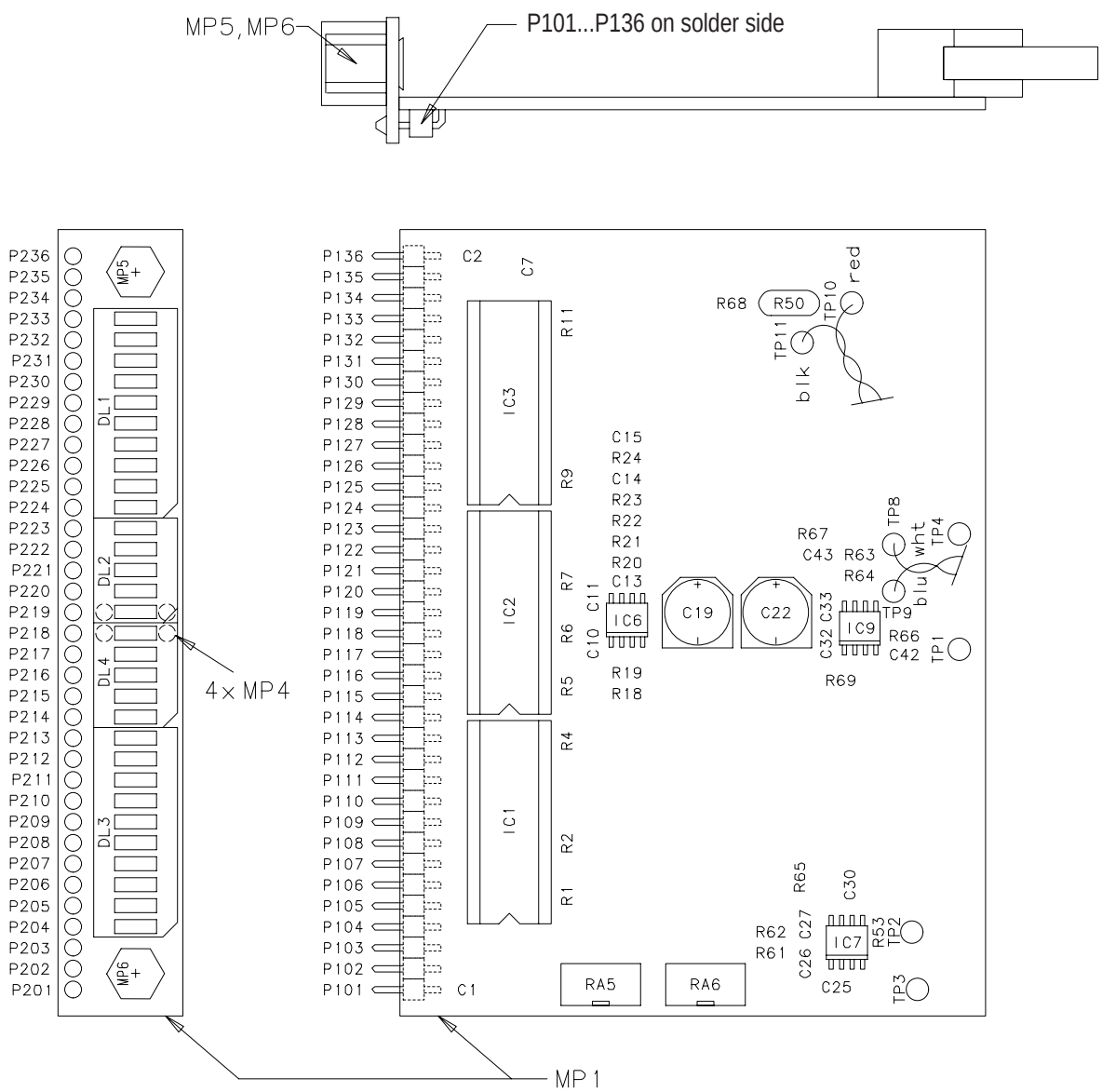
| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.34.1120 | | 12p | CER 63V, 5%, NP 0 |
| 0 | C 2 | 59.02.5683 | | 68n | MPC, 5%, 250V |
| 0 | C 3 | 59.12.7752 | | 7n5 | PS 63V 1% |
| 0 | C 4 | 59.22.5101 | | 100u | EL 25V 20% RM5 |
| 0 | C 5 | 59.12.7392 | | 3n9 | PS 63V 1% |
| 0 | C 6 | 59.34.4680 | | 68p | CER 63V, 5%, N750 |
| 0 | C 7 | 59.22.5101 | | 100u | EL 25V 20% RM5 |
| 0 | C 8 | 59.34.1120 | | 12p | CER 63V, 5%, NP 0 |
| 0 | C 9 | 59.02.5683 | | 68n | MPC, 5%, 250V |
| 0 | C 10 | 59.12.7752 | | 7n5 | PS 63V 1% |
| 0 | C 11 | 59.22.5101 | | 100u | EL 25V 20% RM5 |
| 0 | C 12 | 59.12.7392 | | 3n9 | PS 63V 1% |
| 0 | C 13 | 59.34.4680 | | 68p | CER 63V, 5%, N750 |
| 0 | C 14 | 59.22.5101 | | 100u | EL 25V 20% RM5 |
| 0 | C 15 | 59.22.5101 | | 100u | EL 25V 20% RM5 |
| 0 | C 16 | 59.26.1220 | | 22u | SAL 10V 20% |
| 0 | C 17 | 59.26.1220 | | 22u | SAL 10V 20% |
| 0 | C 18 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | C 19 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | D 1 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 2 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 3 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 4 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | IC 1 | 50.09.0107 | | 4559 | Dual Op-Amp |
| 0 | IC 2 | 50.09.0107 | | 4559 | Dual Op-Amp |
| 0 | IC 3 | 50.05.0122 | | 1496 | Multiplier TO100 |
| 0 | MP 1 | 1.913.210.11 | 1 pcs | | CORRELATOR BOARD |
| 0 | MP 2 | 54.02.0471 | 25 pcs | | Stift d 1.5 * 5.5 löt |
| 0 | P 1 | 54.14.2012 | | 16p | Winkelstecker Au |
| 0 | R 1 | 57.11.3562 | | 5k6 | MF, 1%, 0207 |
| 0 | R 2 | 57.11.3562 | | 5k6 | MF, 1%, 0207 |
| 0 | R 3 | 57.11.3151 | | 150R | MF, 1%, 0207 |
| 0 | R 4 | 58.01.7102 | | 1k0 | Cermet, 10% 0.25W |
| 0 | R 5 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 6 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 7 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 8 | 57.11.3221 | | 220R | MF, 1%, 0207 |
| 0 | R 9 | 57.11.3333 | | 33k | MF, 1%, 0207 |
| 0 | R 10 | 57.11.3562 | | 5k6 | MF, 1%, 0207 |
| 0 | R 11 | 57.11.3562 | | 5k6 | MF, 1%, 0207 |
| 0 | R 12 | 57.11.3151 | | 150R | MF, 1%, 0207 |
| 0 | R 13 | 58.01.7102 | | 1k0 | Cermet, 10% 0.25W |
| 0 | R 14 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 15 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 16 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 17 | 57.11.3221 | | 220R | MF, 1%, 0207 |
| 0 | R 18 | 57.11.3333 | | 33k | MF, 1%, 0207 |
| 0 | R 19 | 57.11.3471 | | 470R | MF, 1%, 0207 |
| 0 | R 20 | 57.11.3471 | | 470R | MF, 1%, 0207 |
| 0 | R 21 | 57.11.3682 | | 6k8 | MF, 1%, 0207 |
| 0 | R 22 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 23 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 24 | 57.11.3153 | | 15k | MF, 1%, 0207 |
| 0 | R 25 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 26 | 58.01.8203 | | 20k | Cermet, 10%, 0.5W, horizontal |
| 0 | R 27 | 57.11.3822 | | 8k2 | MF, 1%, 0207 |
| 0 | R 28 | 57.11.3822 | | 8k2 | MF, 1%, 0207 |
| 0 | R 29 | 58.01.8103 | | 10k | Cermet, 10%, 0.5W, horizontal |
| 0 | R 30 | 57.11.3471 | | 470R | MF, 1%, 0207 |
| 0 | R 31 | 57.11.3471 | | 470R | MF, 1%, 0207 |
| 0 | R 32 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 33 | 57.11.3479 | | 4R7 | MF, 1%, 0207 |
| 0 | R 34 | 57.99.0206 | | 50R | PTC, 25V, 0.5W |
| 0 | R 35 | 57.99.0206 | | 50R | PTC, 25V, 0.5W |
| 0 | T 1 | 1.022.218.00 | | 1 : 1 | EINGANGSTRAFO 1 : 1 |
| 0 | T 2 | 1.022.218.00 | | 1 : 1 | EINGANGSTRAFO 1 : 1 |
| 0 | W 1 | 1.010.324.64 | | RM10.2 | U shaped wire 0.6mm |
| 0 | W 2 | 1.010.324.64 | | RM10.2 | U shaped wire 0.6mm |
| 0 | XIC 1 | 53.03.0166 | | 8p | DIL-socket 0.3" |
| 0 | XIC 2 | 53.03.0166 | | 8p | DIL-socket 0.3" |

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|

**End of List**

**Comments:**

## Correlator 30 LED PCB 1.913.095.00 ( 0)




| | | | | | |
|---|---|---|---|---|---|
| Edition Ausgabe | 05.12.2001 | ZT | ML | HW | 0 |
| | Date Datum | Visa Gez. | Checked Gepr. | Seen Ges. | Index |
| Page: Seite: | | 1 / 1 | | | |

STUDER REGENSDORF — Description: Benennung: CORRELATOR 30 LED, ESE — Z — Number: Nummer: 1.913.095.00

# Correlator 30 LED PCB 1.913.095.00 ( 0)

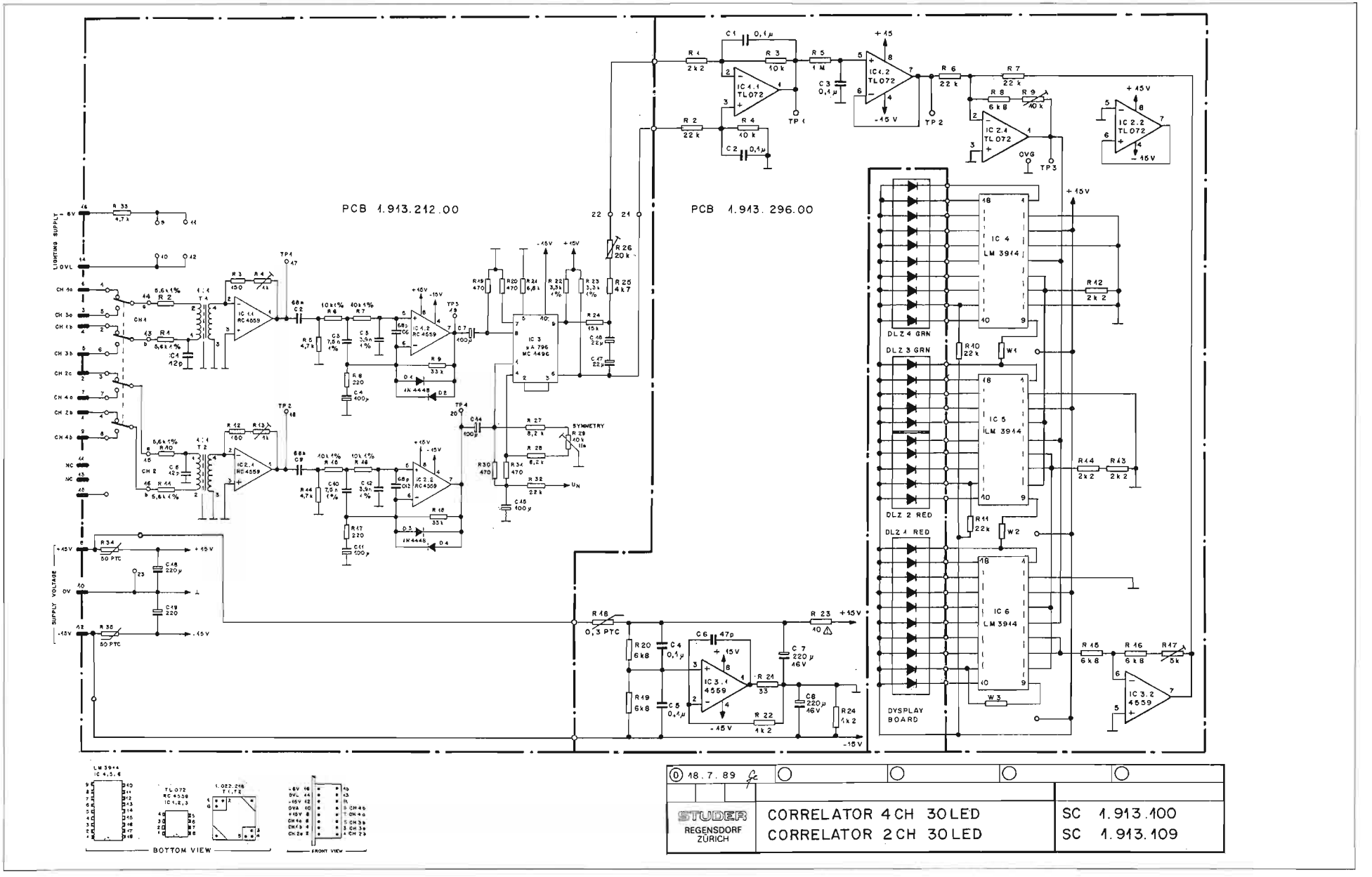


| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 2 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 7 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 10 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 11 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 13 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, C0G, 0603 |
| 0 | C 14 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 15 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 19 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 22 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 25 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 26 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 27 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 30 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 32 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 33 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 42 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 43 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | DL 1 | 50.04.2150 | 1 pce | MV57164 | 10*LED-Bargraf rot diffus |
| 0 | DL 2 | 1.913.109.01 | 1 pce | | 5 LED DISPLAY RED |
| 0 | DL 3 | 50.04.2161 | 1 pce | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 | DL 4 | 1.913.109.02 | 1 pce | | 5 LED DISPLAY GREEN |
| 0 | IC 1 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 2 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 3 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 6 | 50.61.0207 | 1 pce | LF353 | Dual Op-Amp JFET SO 8 |
| 0 | IC 7 | 50.61.0207 | 1 pce | LF353 | Dual Op-Amp JFET SO 8 |
| 0 | IC 9 | 50.61.0207 | 1 pce | LF353 | Dual Op-Amp JFET SO 8 |
| 0 | MP 1 | 1.913.293.11 | 1 pce | | VU/PPM/GRM METER PCB |
| 0 | MP 2 | 1.913.109.04 | 1 pce | | STUDER-NR.-ETIKETTE 10 * 20 |
| 0 | MP 3 | 43.01.0108 | 1 pce | Label | ESE-Warnschild |
| 0 | MP 4 | 1.913.109.03 | 4 pcs | | DISPLAY UNTERLAGE |
| 0 | MP 5 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 0 | MP 6 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 0 | P 101 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 102 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 103 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 104 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 105 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 106 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 107 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 108 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 109 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 110 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 111 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 112 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 113 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 114 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 115 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 116 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 117 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 118 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 119 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 120 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 121 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 122 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 123 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 124 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 125 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 126 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 127 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 128 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 129 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 130 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 131 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 132 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 133 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 134 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 135 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | P 136 | 54.11.0125 | | 1p | Pin, 1reihig, winkel |
| 0 | R 1 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 2 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 4 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 5 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 6 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 7 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 9 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 11 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 18 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 | R 19 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 | R 20 | 57.60.1330 | 1 pce | 33R | MF, 1%, 0204, E24 |
| 0 | R 21 | 57.60.1122 | 1 pce | 1k2 | MF, 1%, 0204, E24 |
| 0 | R 22 | 57.60.1102 | 1 pce | 1k0 | MF, 1%, 0204, E24 |
| 0 | R 23 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 24 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 50 | 57.92.7012 | 1 pce | 0.3A | PTC 60V |
| 0 | R 53 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 61 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 | R 62 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 63 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 64 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 65 | 57.60.1105 | 1 pce | 1M0 | MF, 1%, 0204, E24 |
| 0 | R 66 | 57.60.1103 | 1 pce | 10k | MF, 1%, 0204, E24 |
| 0 | R 67 | 57.60.1103 | 1 pce | 10k | MF, 1%, 0204, E24 |
| 0 | R 68 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 69 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | RA 5 | 58.01.9502 | 1 pce | 5k0 | Cermet, 10%, 0.5W, vertical |
| 0 | RA 6 | 58.01.9103 | 1 pce | 10k | Cermet, 10%, 0.5W, vertical |
| 0 | TP 1 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 2 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 3 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 4 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 8 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 9 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 10 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 11 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |

End of List

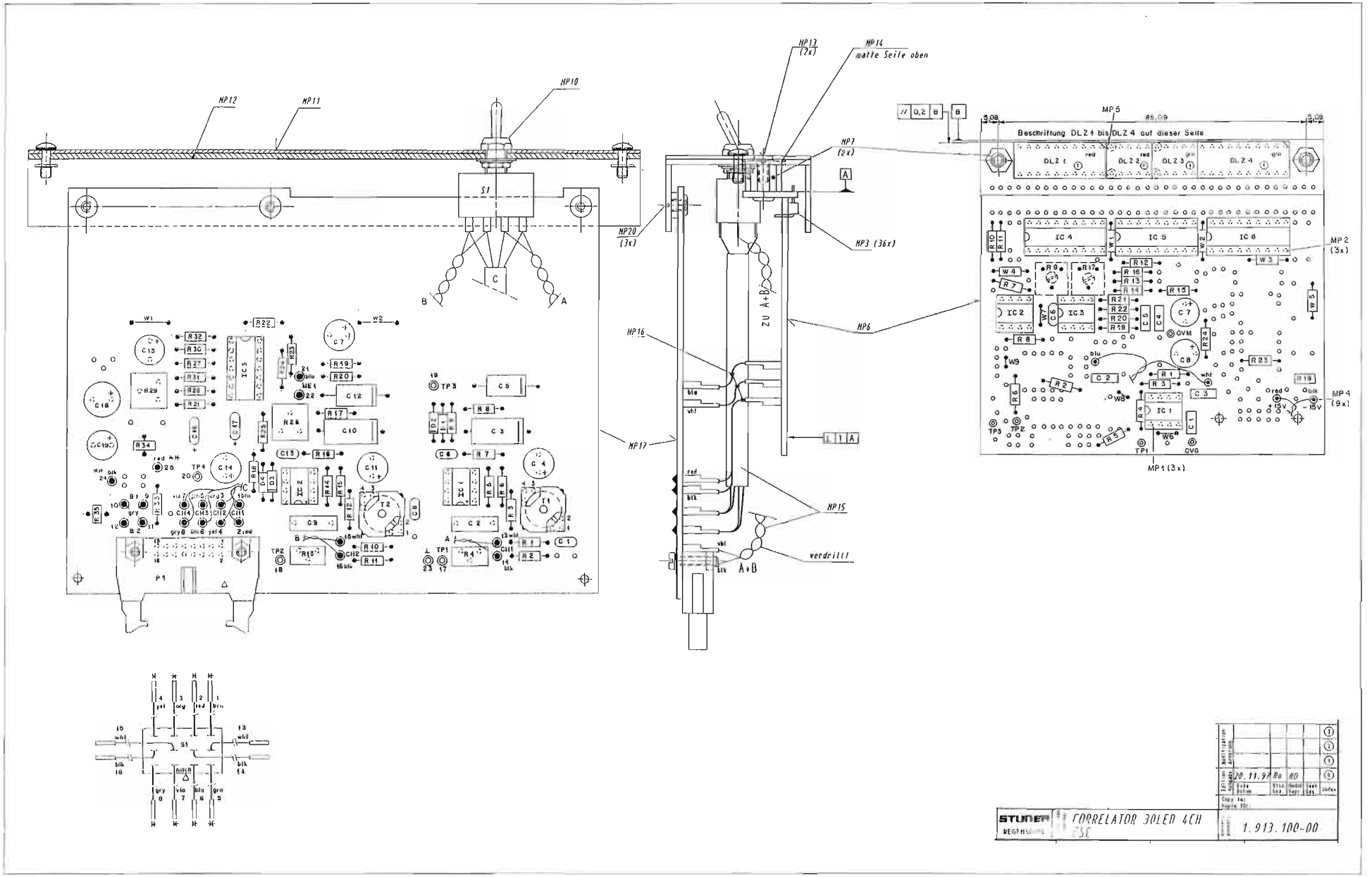
**Comments:**

**Correlator 4CH 30 LED 1.913.100**
**Correlator 2CH 30 LED 1.913.109**




| | | |
|---|---|---|
| 18.7.89 | | |
| STUDER REGENSDORF ZÜRICH | CORRELATOR 4 CH 30 LED<br>CORRELATOR 2 CH 30 LED | SC 1.913.100<br>SC 1.913.109 |

## Correlator 4CH 30 LED 1.913.100



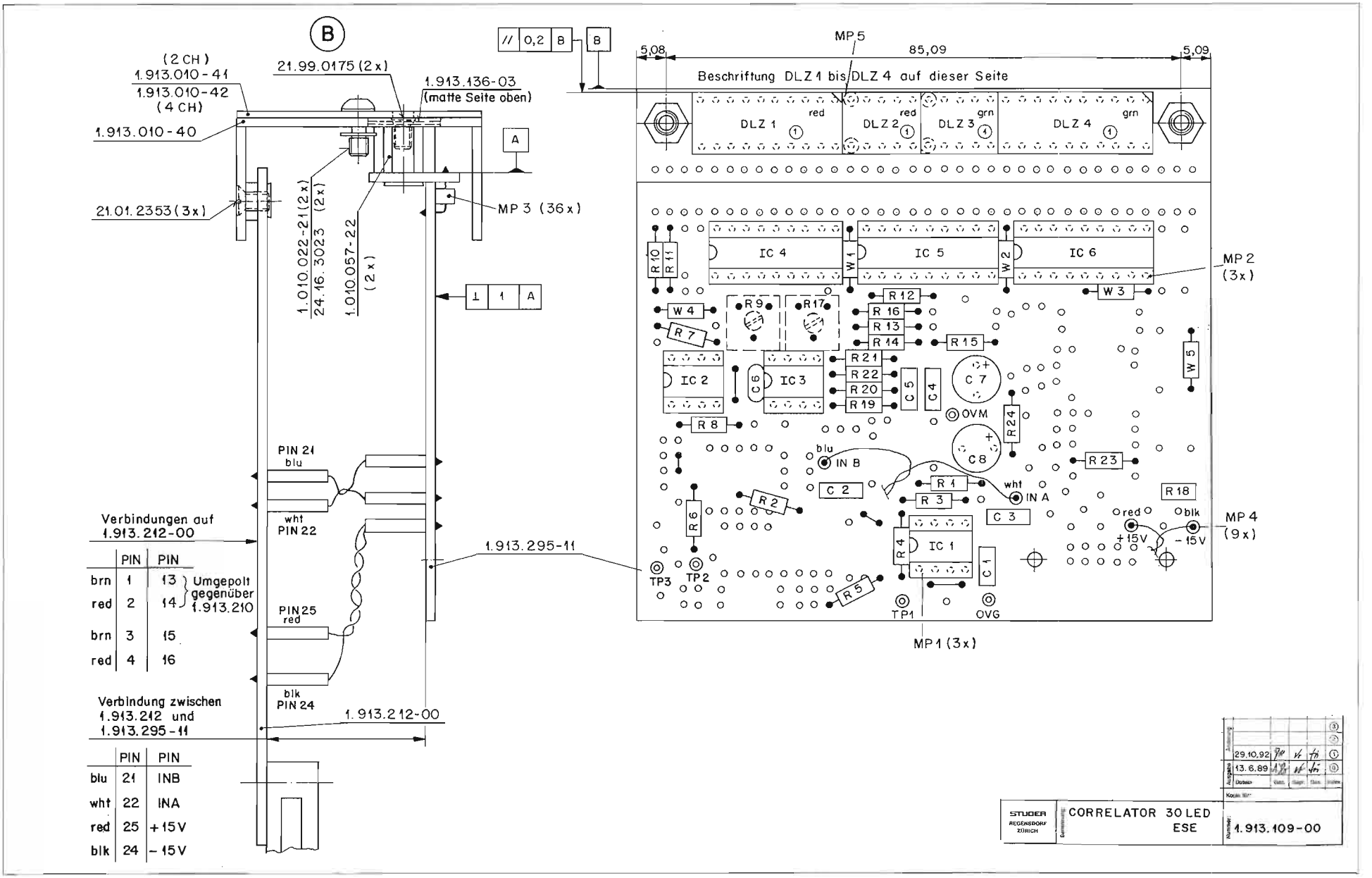
# Correlator 4CH 30 LED 1.913.100

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 2 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 3 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 4 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 5 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 6 | 59.34.2470 | | 47p | CER 63V, 5%, N150 |
| 0 | C 7 | 59.22.4221 | | 220u | EL 16V, 20%, RM5 |
| 0 | C 8 | 59.22.4221 | | 220u | EL 16V, 20%, RM5 |
| 0 | DLZ 1 | 50.04.2150 | | MV57164 | DLZ MV 57164 " G " 10*D RT |
| 0 | DLZ 2 | 1.913.109.01 | | | 5 LED DISPLAY RED |
| 0 | DLZ 3 | 1.913.109.02 | | | 5 LED DISPLAY GREEN |
| 0 | DLZ 4 | 50.04.2161 | | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 | IC 1 | 50.09.0101 | | TL072 | IC TL 072 CN ,A |
| 0 | IC 2 | 50.09.0101 | | TL072 | IC TL 072 CN ,A |
| 0 | IC 3 | 50.09.0107 | | RC4559 | Dual Op-Amp |
| 0 | IC 4 | 50.11.0119 | | LM3914 | IC LM 3914 N, |
| 0 | IC 5 | 50.11.0119 | | LM3914 | IC LM 3914 N, |
| 0 | IC 6 | 50.11.0119 | | LM3914 | IC LM 3914 N, |
| 0 | MP 1 | 53.03.0166 | 3 mp | 8p | DIL 0.3", löt, gerade |
| 0 | MP 2 | 53.03.0175 | 3 mp | 18p | DIL 0.3", löt, gerade |
| 0 | MP 3 | 54.11.0132 | 36 mp | 1p | P STIFT,WINKEL 1 PIN=1 STK. |
| 0 | MP 4 | 54.02.0471 | 9 mp | | Stift d 1.5 * 5.5 löt |
| 0 | MP 5 | 1.913.109.03 | 4 mp | | DISPLAY UNTERLAGE |
| 0 | MP 6 | 1.913.295.11 | 1 pce | | VU/PPM METER 30LED PCB |
| 0 | MP 7 | 1.010.057.22 | 2 pcs | | NIETMUTTER, M 3 * 7.4 |
| 0 | MP 8 | 43.01.0108 | | Label | ESE-WARNSCHILD |
| 0 | MP 9 | 1.913.100.04 | | | STUDER-NR.-ETIKETTE 10 * 20 |
| 0 | MP 10 | 1.010.031.22 | 1 pce | | ABDECKMUTTER SW 8 |
| 0 | MP 11 | 1.913.010.42 | 1 pce | | FRONTSCHILD 1E 30LED CORR.4CH |
| 0 | MP 12 | 1.913.010.40 | 1 pce | | TRAEGER 1E 30LED CORRELATOR |
| 0 | MP 13 | 21.99.0175 | 2 pcs | | S - SCHR. IS ,SWOX, M 3 * 6 |
| 0 | MP 14 | 1.913.136.03 | 1 pce | | FENSTER BUS SELECTOR +VU |
| 0 | MP 15 | 1.913.211.93 | 1 pce | | LI-L KORRELATOR 4CH |
| 0 | MP 16 | 1.913.109.93 | 1 pce | | LL CORRELATOR 30 LED |
| 0 | MP 17 | 1.913.212.00 | 1 pce | | CORRELATOR BOARD ,A |
| 0 | MP 18 | 24.16.3023 | 2 pcs | | WELLENSICHERUNG 2.3 |
| 0 | MP 19 | 1.010.022.21 | 2 pcs | | LINSENSCHRAUBE IS SPEZ.M3X8 SW |
| 0 | MP 20 | 21.01.2353 | 3 pcs | | S - SCHR. , ZN , M 3 * 5 |
| 0 | R 1 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 2 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 3 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 4 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 5 | 57.11.3105 | | 1M0 | MF, 1%, 0207 |
| 0 | R 6 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 7 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 8 | 57.11.3682 | | 6k8 | MF, 1%, 0207 |
| 0 | R 9 | 58.01.8103 | | 10k | Cermet, 10%, 0.5W, horizontal |
| 0 | R 10 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 11 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 12 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 13 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 14 | 57.11.3222 | | 2k2 | MF, 1%, 0207 |
| 0 | R 15 | 57.11.3682 | | 6k8 | MF, 1%, 0207 |
| 0 | R 16 | 57.11.3682 | | 6k8 | MF, 1%, 0207 |
| 0 | R 17 | 58.01.8502 | | 5k | Cermet, 10%, 0.5W, horizontal |
| 0 | R 18 | 57.92.7001 | | | RT 500 MA, PTC ->57.92.7013 |
| 0 | R 19 | 57.11.3682 | | 6k8 | MF, 1%, 0207 |
| 0 | R 20 | 57.11.3682 | | 6k8 | MF, 1%, 0207 |
| 0 | R 21 | 57.11.3330 | | 33R | MF, 1%, 0207 |
| 0 | R 22 | 57.11.3122 | | 1k2 | MF, 1%, 0207 |
| 0 | R 23 | 57.19.0100 | | 10R | 5%, 0207, Fuse |
| 0 | R 24 | 57.11.3122 | | 1k2 | MF, 1%, 0207 |
| 0 | S 1 | 55.01.0115 | | | S KIPP , 4*ON-ON , AG |
| 0 | W 1 | 57.11.3000 | | 0R0 | MF, 0207 |
| 0 | W 2 | 57.11.3000 | | 0R0 | MF, 0207 |
| 0 | W 3 | 57.11.3000 | | 0R0 | MF, 0207 |
| 0 | W 4 | 57.11.3000 | | 0R0 | MF, 0207 |
| 0 | W 5 | 57.11.3000 | | 0R0 | MF, 0207 |
| 0 | W 6 | 1.010.321.64 | | Wire | DRAHTBRUECKE U, 4.3* 5.0, 0.6 |
| 0 | W 7 | 1.010.321.64 | | Wire | DRAHTBRUECKE U, 4.3* 5.0, 0.6 |
| 0 | W 8 | 1.010.329.64 | | Wire | DRAHTBRUECKE U, 4.3* 2.5, 0.6 |
| 0 | W 9 | 1.010.329.64 | | Wire | DRAHTBRUECKE U, 4.3* 2.5, 0.6 |

End of List

Comments

## Correlator 2CH 30 LED 1.913.109




| | | |
|---|---|---|
| 29.10.92 | | |
| 13.6.89 | | |

STUDER REGENSDORF ZÜRICH

CORRELATOR 30 LED ESE

1.913.109-00

## Correlator 2CH 30 LED 1.913.109

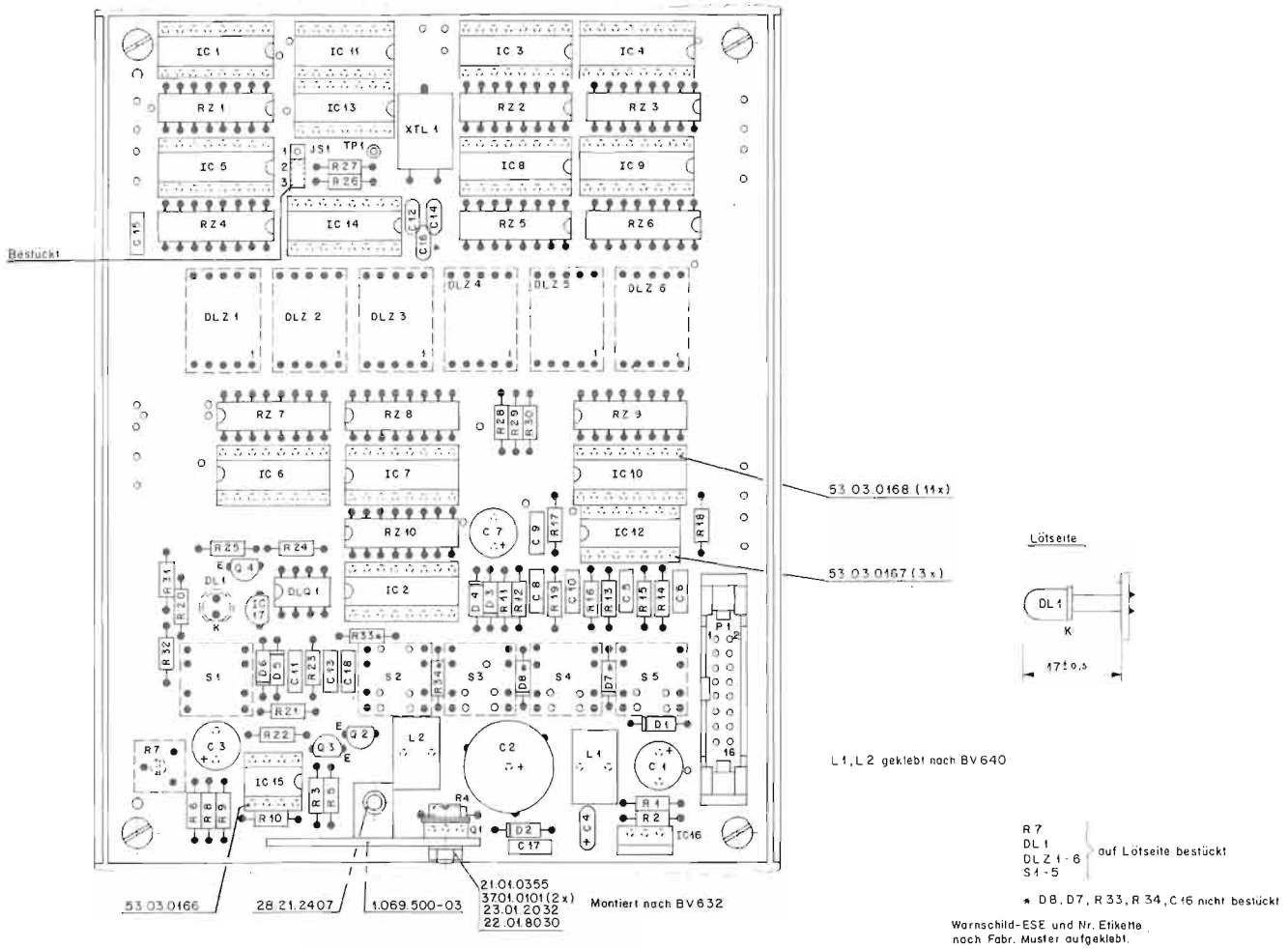
| Ind. | Pos.Nr. | Teil Nr. | Wert(Menge) | Bezeichnung | Hersteller |
|---|---|---|---|---|---|
| 00 | C....01 | 59.06.0104 | 0.1 uF | PE | |
| 00 | C....02 | 59.06.0104 | 0.1 uF | PE | |
| 00 | C....03 | 59.06.0104 | 0.1 uF | PE | |
| 00 | C....04 | 59.06.0104 | 0.1 uF | PE | |
| 00 | C....05 | 59.06.0104 | 0.1 uF | PE | |
| 00 | C....06 | 59.34.2470 | 47 pF | CE | |
| 00 | C....07 | 59.22.4221 | 220 uF 16V | EL | |
| 00 | C....08 | 59.22.4221 | 220 uF 16V | EL | |
| 00 | DLZ..01 | 50.04.2150 | 10 LED | DISPLAY RED | HP |
| 00 | DLZ..02 | 1.913.109.01 | 5 LED | DISPLAY RED | St;HP |
| 00 | DLZ..03 | 1.913.109.02 | 5 LED | DISPLAY GREEN | St;HP |
| 00 | DLZ..04 | 50.04.2161 | 10 LED | DISPLAY GREEN | HP |
| 00 | IC...01 | 50.09.0101 | TL 072 | dual op. amp. | NS,TI |
| 00 | IC...02 | 50.09.0101 | TL 072 | dual op. amp. | NS,TI |
| 00 | IC...03 | 50.09.0107 | 4559 | dual op. amp. | RC |
| 00 | IC...04 | 50.11.0119 | LM3914 | LED bar/dot lin. | NS |
| 00 | IC...05 | 50.11.0119 | LM3914 | LED bar/dot lin. | NS |
| 00 | IC...06 | 50.11.0119 | LM3914 | LED bar/dot lin. | NS |
| 00 | MP...01 | 53.03.0166 | 3 pcs | 8-pin IC-socket | |
| 00 | MP...02 | 53.03.0175 | 3 pcs | 18-pin IC-socket | |
| 00 | MP...03 | 54.11.0132 | 36 pcs | Connection | |
| 00 | MP...04 | 54.02.0471 | 9 pcs | Plug ( Rund - Steckstift ) | |
| 00 | MP...05 | 1.913.109.03 | 1 pcs | Display-Unterlage | St |
| 00 | R....01 | 57.11.3222 | 2.2 kOhm | 1% 0.25W | |
| 00 | R....02 | 57.11.3223 | 22 kOhm | 1% 0.25W | |
| 00 | R....03 | 57.11.3103 | 10 kOhm | 1% 0.25W | |
| 00 | R....04 | 57.11.3103 | 10 kOhm | 1% 0.25W | |
| 00 | R....05 | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| 00 | R....06 | 57.11.3223 | 22 kOhm | 1% 0.25W | |
| 00 | R....07 | 57.11.3223 | 22 kOhm | 1% 0.25W | |
| 00 | R....08 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | |
| 00 | R....09 | 58.01.8103 | 10 kOhm | 10% 0.50W variabel ,liegend | |
| 00 | R....10 | 57.11.3223 | 22 kOhm | 1% 0.25W | |
| 00 | R....11 | 57.11.3223 | 22 kOhm | 1% 0.25W | |
| 00 | R....12 | 57.11.3222 | 2.2 kOhm | 1% 0.25W | |
| 00 | R....13 | 57.11.3222 | 2.2 kOhm | 1% 0.25W | |
| 00 | R....14 | 57.11.3222 | 2.2 kOhm | 1% 0.25W | |
| 00 | R....15 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | |
| 00 | R....16 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | |
| 00 | R....17 | 58.01.8502 | 5 kOhm | 10% 0.50W variabel, liegend | |
| 00 | R....18 | 57.92.7001 | 0.3 Ohm | 0.5 A PTC | |
| 00 | R....19 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | |
| 00 | R....20 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | |
| 00 | R....21 | 57.11.3330 | 33 Ohm | 1% 0.25W | |
| 00 | R....22 | 57.11.3122 | 1.2 kOhm | 1% 0.25W | |
| 00 | R....23 | 57.19.0100 | 10 Ohm | 5% 0.33W fusible resistor /!\ | |
| 00 | R....24 | 57.11.3122 | 1.2 kOhm | 1% 0.25W | |
| 00 | W....01 | 57.11.3000 | | Wire link | |
| 00 | W....02 | 57.11.3000 | | Wire link | |
| 00 | W....03 | 57.11.3000 | | Wire link | |
| 00 | W....04 | 57.11.3000 | | Wire link | |
| 00 | W....05 | 57.11.3000 | | Wire link | |

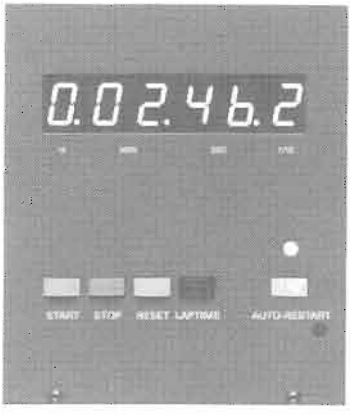
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

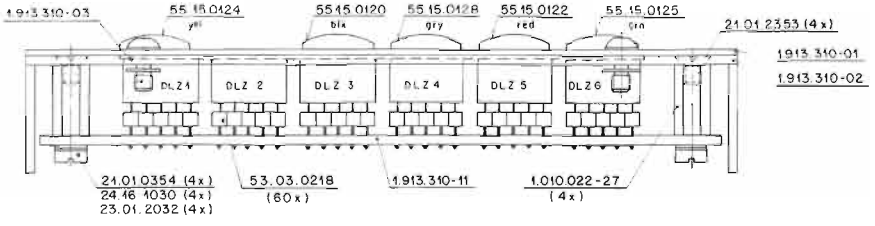
MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola,
NS=National Semiconductors, Ph=Philips, Ra=Raytheon,
Sig=Signetics, Si=Siemens , St=Studer,
TI=Texas Instrument,

## 6. Stop Watch Unit 1.913.310.81

**Stop watch Unit** **1.913.310.81**



## Stop Watch 1.913.310.81

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|
| | C.....1 | 59.22.6470 | 47 uF -20% 40V EL | |
| | C.....2 | 59.22.6102 | 1000 uF -20% 40V EL | |
| | C.....3 | 59.22.4101 | 100 uF -20% 16V EL | |
| | C.....4 | 59.26.2100 | 10 uF -20% 16V EL | |
| | C.....5 | 59.06.0104 | 100 nF 10% PE | |
| | C.....6 | 59.06.0104 | 100 nF 10% PE | |
| | C.....7 | 59.22.4101 | 100 uF -20% 16V EL | |
| | C.....8 | 59.06.0104 | 100 nF 10% PE | |
| | C.....9 | 59.06.0104 | 100 nF 10% PE | |
| | C....10 | 59.06.0104 | 100 nF 10% PE | |
| | C....11 | 59.06.0104 | 100 nF 10% PE | |
| | C....12 | 59.34.4101 | 100 pF CE | |
| | C....13 | 59.06.0104 | 100 nF 10% PE | |
| | C....14 | 59.34.1829 | 8.2 pF CE | |
| | C....15 | 59.06.0104 | 100 nF 10% PE | |
| | C....16 | . . | not used | |
| | C....17 | 59.06.0104 | 100 nF 10% PE | |
| | C....18 | 59.06.0104 | 100 nF 10% PE | |
| | D.....1 | 50.04.0512 | 1N5818 Schottky Diode | any |
| | D.....2 | 50.04.0512 | 1N5818 Schottky Diode | any |
| | D.....3 | 50.04.0125 | 1N4448 | any |
| | D.....4 | 50.04.0125 | 1N4448 | any |
| | D.....5 | 50.04.1112 | Z 5V1 400mW BZX83C5V1 ,BZX55C5V1 ,ZPD 5V1 | Ses,ITT |
| | D.....6 | 50.04.0125 | 1N4448 | any |
| | D.....7 | . . | not used | |
| | D.....8 | . . | not used | |
| | DL....1 | 50.04.2112 | LED Led gb dif. | |
| | DLQ...1 | 50.99.0111 | MCT6 Dual Optokoppler | |
| | DLZ...1 | 73.01.0140 | HDSP 550 3 Display | HP |
| | DLZ...2 | 73.01.0140 | HDSP 550 3 Display | HP |
| | DLZ...3 | 73.01.0140 | HDSP 550 3 Display | HP |
| | DLZ...4 | 73.01.0140 | HDSP 550 3 Display | HP |
| | DLZ...5 | 73.01.0140 | HDSP 550 3 Display | HP |
| | DLZ...6 | 73.01.0140 | HDSP 550 3 Display | HP |
| | JS....1 | 54.01.0020 | Jumper Plug 3 Pin | |
| | JP....1 | 54.01.0021 | Jumper Jack | |
| | IC....1 | 50.07.0566 | MC14566B ind. time base generator | Mot |
| | IC....2 | 50.07.0566 | MC14566B ind. time base generator | Mot |
| | IC....3 | 50.07.0566 | MC14566B ind. time base generator | Mot |
| | IC....4 | 50.07.0566 | MC14566B ind. time base generator | Mot |
| | IC....5 | 50.07.0511 | MC14511B latch/decoder/display-driver | Mot |
| | IC....6 | 50.07.0511 | MC14511B latch/decoder/display-driver | Mot |
| | IC....7 | 50.07.0511 | MC14511B latch/decoder/display-driver | Mot |
| | IC....8 | 50.07.0511 | MC14511B latch/decoder/display-driver | Mot |
| | IC....9 | 50.07.0511 | MC14511B latch/decoder/display-driver | Mot |
| | IC...10 | 50.07.0511 | MC14511B latch/decoder/display-driver | Mot |
| | IC...11 | 50.07.0006 | HEF4001 Quad 2-Input NOR Gate | |
| | IC...12 | 50.07.0008 | HEF4093 NAND Schmitt trigger | |
| | IC...13 | 50.07.0013 | HEF4013 Dual D-flip-flop | |
| | IC...14 | 50.07.0060 | HEF4060 Binary Counter | Mot |
| | IC...15 | 50.09.0101 | TL 072 dual op. amp. ( LF 353 N ) | TI |
| | IC...16 | 50.10.0104 | LM 317 Voltage Reg. | |
| | IC...17 | 50.10.0108 | LM 317 Voltage Reg. | |
| 01 | IC...17 | 50.10.0107 | 7805 Voltage Reg. | |
| | L.....1 | 62.03.0005 | L 250uH RFI-suppression coil | Tokin |
| | L.....2 | 62.03.0005 | L 250uH RFI-suppression coil | Tokin |
| | MP....1 | 53.03.0166 | 1pcs Ic-socket 8 Pin | |
| | MP....2 | 53.03.0167 | 3pcs Ic-socket 14 Pin | |
| | MP....3 | 53.03.0168 | 11pcs Ic-socket 16 Pin | |
| | MP....4 | 1.069.500.03 | 1pcs Head sink | |
| | MP....5 | 1.010.012.22 | 1pcs Nietbolzen M3*2 | |
| | MP....6 | 55.15.0124 | 1pcs yel.Botton for S1 | |
| | MP....7 | 55.15.0120 | 1pcs blk.Botton for S2 | |
| | MP....8 | 55.15.0128 | 1pcs gray Botton for S3 | |
| | MP....9 | 55.15.0122 | 1pcs red.Botton for S4 | |
| | MP...10 | 55.15.0125 | 1pcs grn.Botton for S5 | |
| | P.....1 | 54.14.2052 | 16 Pin ribbon cable connector | |
| | Q.....1 | 50.03.0493 | Bd 437 npn | |
| | Q.....2 | 50.03.0351 | Bc 327 pnp | |
| | Q.....3 | 50.03.0436 | Bc 237 npn | |
| | Q.....4 | 50.03.0436 | Bc 237 npn | |
| | R.....1 | 57.11.4152 | 1.5 kOhm 5% 0.25W | |
| | R.....2 | 57.11.4221 | 220 Ohm 5% 0.25W | |
| | R.....3 | 57.11.4471 | 470 Ohm 5% 0.25W | |
| | R.....4 | 57.11.4121 | 120 Ohm 5% 0.25W | |
| | R.....5 | 57.11.4332 | 3.3 kOhm 5% 0.25W | |
| | R.....6 | 57.11.4681 | 680 Ohm 2% 0.25W | |
| | R.....7 | 58.01.8102 | 1 kOhm 10% 0.50W trimming resistor | |
| | R.....8 | 57.11.4821 | 820 Ohm 2% 0.25W | |
| | R.....9 | 57.11.4102 | 1 kOhm 5% 0.25W | |
| | R....10 | 57.11.4105 | 1 MOhm 5% 0.25W | |
| | R....11 | 57.11.4102 | 1 kOhm 5% 0.25W | |
| | R....12 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| | R....13 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| | R....14 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| | R....15 | 57.11.4102 | 1 kOhm 5% 0.25W | |
| | R....16 | 57.11.4102 | 1 kOhm 5% 0.25W | |
| | R....17 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| | R....18 | 57.11.4472 | 4.7 kOhm 5% 0.25W | |
| | R....19 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| | R....20 | 57.11.4102 | 1 kOhm 5% 0.25W | |
| | R....21 | 57.11.4472 | 4.7 kOhm 5% 0.25W | |
| | R....22 | 57.11.4103 | 10 kOhm 5% 0.25W | |
| | R....23 | 57.11.4221 | 220 Ohm 5% 0.25W | |
| | R....24 | 57.11.4152 | 1.5 kOhm 5% 0.25W | |
| 01 | R....24 | 57.11.3221 | 220 Ohm 5% 0.25W | |
| | R....25 | 57.11.4152 | 1.5 kOhm 5% 0.25W | |
| | R....26 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| | R....27 | 57.11.4222 | 2.2 kOhm 5% 0.25W | |
| | R....28 | 57.11.4331 | 330 Ohm 5% 0.25W | |
| | R....29 | 57.11.4331 | 330 Ohm 5% 0.25W | |
| | R....30 | 57.11.4331 | 330 Ohm 5% 0.25W | |
| | R....31 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| | R....32 | 57.11.4104 | 100 kOhm 5% 0.25W | |
| 01 | R....32 | 57.11.3102 | 1 kOhm 5% 0.25W | |
| | R....33 | . . | not used | |
| | R....34 | . . | not used | |
| | RZ....1 | 57.88.3473 | 47 kOhm Interface Network | |
| | RZ....2 | 57.88.3473 | 47 kOhm Interface Network | |
| | RZ....3 | 57.88.3473 | 47 kOhm Interface Network | |
| | RZ....4 | 57.88.3221 | 220 Ohm Interface Network | |
| | RZ....5 | 57.88.3221 | 220 Ohm Interface Network | |
| | RZ....6 | 57.88.3221 | 220 Ohm Interface Network | |
| | RZ....7 | 57.88.3221 | 220 Ohm Interface Network | |
| | RZ....8 | 57.88.3221 | 220 Ohm Interface Network | |
| | RZ....9 | 57.88.3221 | 220 Ohm Interface Network | |
| | RZ...10 | 57.88.3473 | 47 kOhm Interface Network | |
| | S.....1 | 55.15.0113 | 2P switch , latching | |
| | S.....2 | 55.15.0112 | 2P switch , non latching | |
| | S.....3 | 55.15.0112 | 2P switch , non latching | |
| | S.....4 | 55.15.0112 | 2P switch , non latching | |
| | S.....5 | 55.15.0112 | 2P switch , non latching | |
| | TP....1 | 54.01.0020 | Jumper Plug 1 Pin | |
| | XTL...1 | 89.01.0376 | 3.2768MHZ Quarz | ITT |

(01) faster rise time for optocoupler

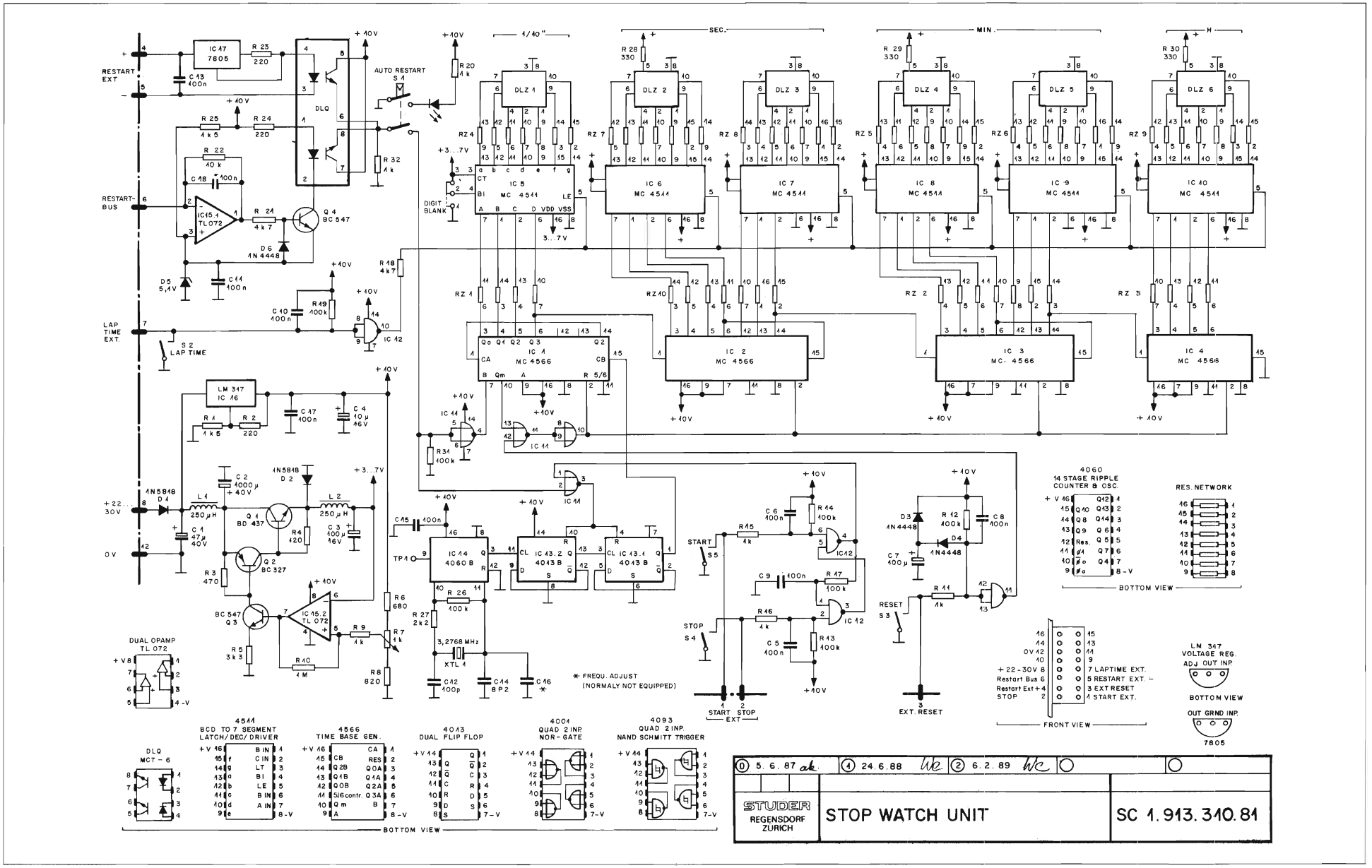
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National
{Matsushita}, NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instrument

1.913.310.81 STOP WATCH SE 88/01/0400

1.913.310.81 STOP WATCH SE 88/06/2401

**Stop watch Unit** **1.913.310.81**




| ⓪ 5. 6. 87 ak | ① 24.6.88 We | ② 6.2.89 We | ○ | ○ |
|---|---|---|---|---|
| STUDER REGENSDORF ZÜRICH | STOP WATCH UNIT | | | SC 1.913.310.81 |



EDITION: 19. Oktober 1990

# VU/PPM LED Level Meter Modules

## Contents

**1** General ..... 2
**2** Functional Description ..... 3
**3** Technical Specifications ..... 3
**4** Block Diagram ..... 4
**5** Alignment ..... 4

| Diagrams | PCB No. | Diagram | Component Layout | Parts List |
|---|---|---|---|---|
| VU/PPM 30 LED with GRM | 1.913.293.00 | 1.913.293.00 | 1.913.293.00 | 1.913.293.00 |
| VU/PPM 30 LED | 1.913.294.00 | | | 1.913.294.00 |
| LED PPM Meter (10 LED) | 1.913.291.00 | 1.913.291.00 | 1.913.291.00 | 1.913.291.00 |

## Scope of Validity

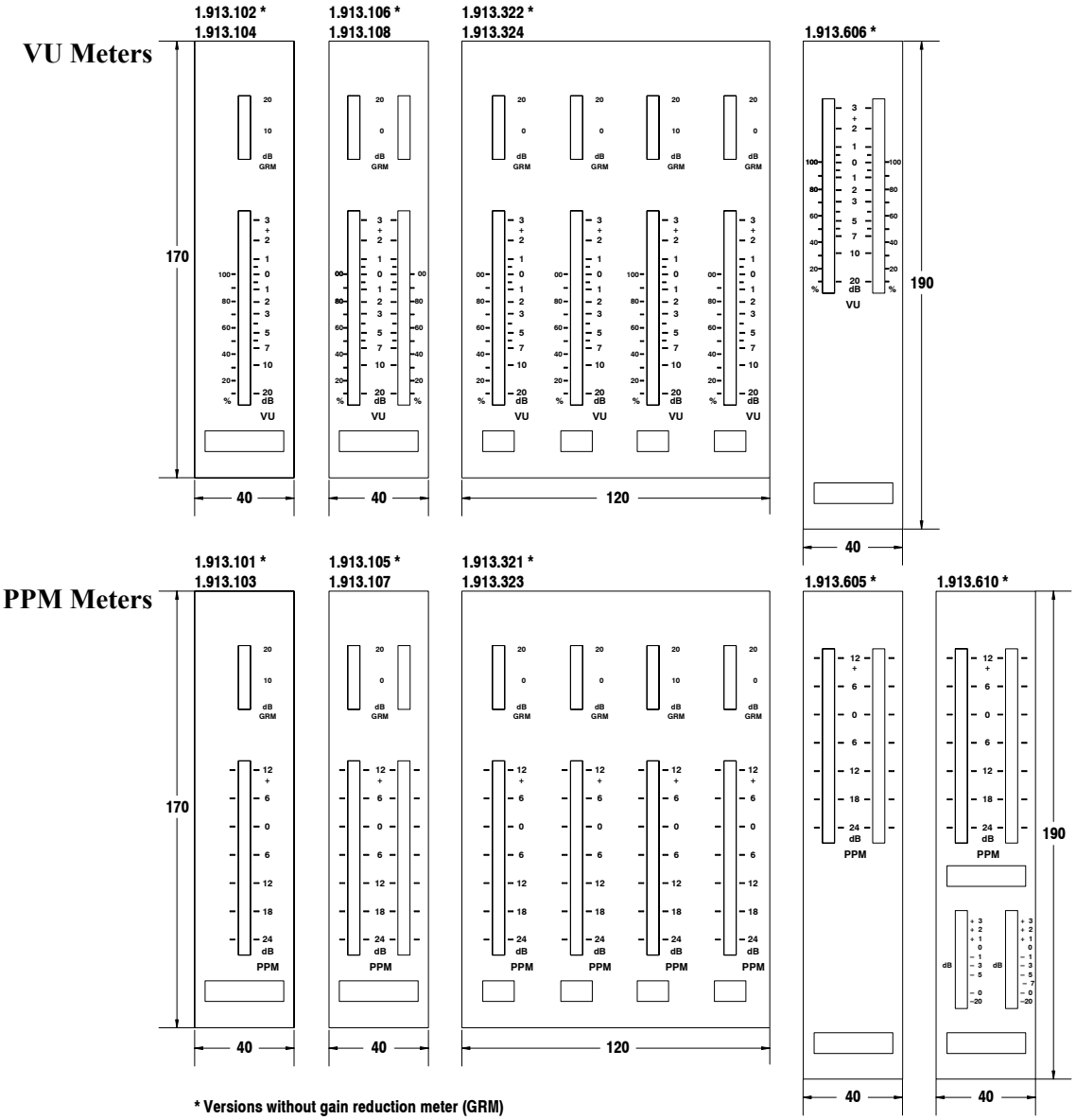
These instructions apply to the following assemblies:

| Display | 1 Channel, dark front panel | 2 Channels, dark front panel | 2 Channels, bright front panel | 4 Channels, dark front panel | *PCB No.* |
|---|---|---|---|---|---|
| **PPM** | 1.913.101 | 1.913.105 | 1.913.605 | 1.913.321 | *1.913.294* |
| **VU** | 1.913.102 | 1.913.106 | 1.913.606 | 1.913.322 | *1.913.294* |
| **PPM w. GRM** | 1.913.103 | 1.913.107 | - | 1.913.323 | *1.913.293* |
| **VU w. GRM** | 1.913.104 | 1.913.108 | - | 1.913.324 | *1.913.293* |
| **PPM w. additional small level meter** | - | - | 1.913.610 | - | *1.913.294, 1.913.291* |

# 1 General

The Level Meter units with 30 LEDs have been developed for installation in the display panel of Studer Mixing Consoles. Instruments with VU (volume unit) and PPM (peak program meter) characteristics, with or without gain reduction meter (GRM) are available. Instead of bar-graph indication, also dot indication is optionally available.

The instruments listed below are equipped with the PCBs 1.913.294 (VU or PPM) or 1.913.293 (VU or PPM with gain reduction meter) according to the table above. Please consult the circuit diagram relating to the corresponding assembly number.




* Versions without gain reduction meter (GRM)

## 2 Functional Description

**PPM:** The peak program meter is a quasi-peak value instrument with long decay time. When a signal voltage corresponding to a level of 0 dB is applied for 10 ms, the resulting indication is –1 dB. Decay time (0 to –20 dB) is 1.7 s.

**VU Meter:** The VU meter indicates signals according to the standard defined by ANSI 1954. When a signal with a duration of 300 ms is applied, the indication is 99% of the reference value. Rise and decay times on a VU meter are identical. The factory-set lead is +6 dB.

**Gain Reduction Meter:** When the limiter/compressor is switched on, the GRM indicates the magnitude of the gain reduction.

**Small PPM:** The assembly 1.913.610 contains an additional small PPM meter with 10 LEDs, normally used for AUX level indication.

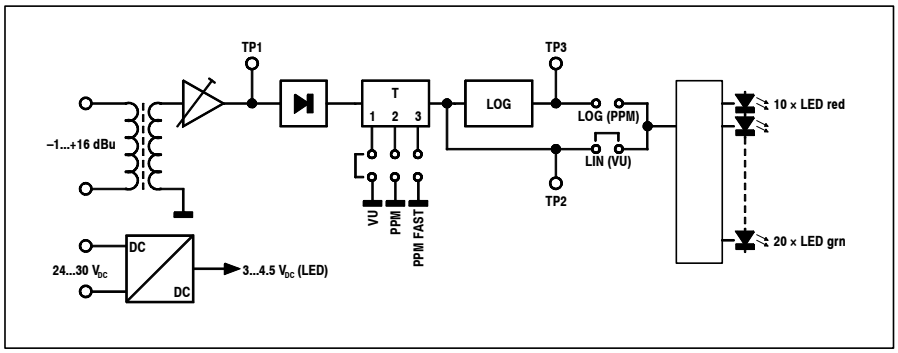
**Bar/Dot Display Selection:** On each of the PCBs, selection of bar or dot display mode is provided. All level meters are factory-set to bar display mode; dot display mode is unusual and recommended only if extra-low current consumption is required.

| PCB No. | Bar Display Mode (Default Factory Setting) | Dot Display Mode |
|---|---|---|
| 1.913.293.00 (VU/PPM 30 LED w. GRM) | insert: R3, R8, R10, R15<br>remove: R4, R9, R11, R14 | insert: R4, R9, R11, R14<br>remove: R3, R8, R10, R15 |
| 1.913.294.00 (VU/PPM 30 LED) | insert: R3, R8, R10<br>remove: R4, R9, R11 | insert: R4, R9, R11<br>remove: R3, R8, R10 |
| 1.913.291.00 (PPM 10 LED) | insert jumper JS201 | remove jumper JS201 |

## 3 Technical Specifications

| | | | | |
|---|---|---|---|---|
| **General:** | **0 dBu ≙ 0.775 $V_{rms}$** | | | |
| | **Sensitivity for reference indication** | –1 dBu ... +16 dBu | | |
| | **Input impedance** | >10 kΩ | | |
| | **Supply** | | ±15 $V_{DC}$ | +24 $V_{DC}$ |
| | **Current consumption without GRM (p. ch., bar display mode)** | Quiescent: | 45 mA | 35 mA |
| | | Full load: | 80 mA | 80 mA |
| | **Current consumption with GRM (p. ch., bar display mode)** | Quiescent: | 55 mA | 45 mA |
| | | Full load: | 105 mA | 105 mA |
| **VU Meter (1.913.293):** | **Indication range** | –20 VU ... +3 VU | | |
| | **Accuracy (conditions: –10...+3 VU, 0...+50° C, 31.5 Hz...16 kHz)** | ± 1 segment | | |
| | **Response time to –1 VU** | 207 ms ±30 ms | | |
| **PPM (1.913.293):** | **Indication range** | –30 dBu ... +15 dBu | | |
| | **Accuracy (conditions: –30...+15 VU, 0...+50° C, 31.5 Hz...16 kHz)** | ± 1 segment | | |
| | **Dynamic behavior** | | | |
| | Jumper "normal" 0 dB, 10 ms burst | Indication: | –1 dB ±0.5 dB | |
| | Jumper "normal" 0 dB, 3 ms burst | Indication: | –4 dB ±1 dB | |
| | Jumper "fast" 0 dB, 100 µs burst | Indication: | –1 dB | |
| | **Decay time: 0...–20 dB** | 1.7 s ±0.3 s | | |
| **GRM (1.913.294):** | **Input voltage range** | min. control: 0 V ... +2 $V_{DC}$<br>max. control: 0 V ... +11 $V_{DC}$ | | |
| **Dimensions:** | 1- and 2-channel units, dark front panel (w × h × d) | | 40 × 170 × 97 mm | |
| | 2-channel units, bright front panel (w × h × d) | | 40 × 190 × 97 mm | |
| | 4-channel units, dark front panel (w × h × d) | | 120 × 170 × 97 mm | |

## 4 VU/PPM Meter Block Diagram




**VU/PPM meter block diagram:** VU/PPM/PPM FAST and LIN/LOG settings are established with jumpers J2 and J3, respectively.

## 5 Alignment

**Required Instruments:** AC voltmeter, $R_i \geq 20$ kΩ
DC voltmeter, $R_i \geq 100$ kΩ
AF generator, 31.5 Hz ... 16 kHz, 0...16 dBu; attenuator with 10 dB increments.

**DC/DC Converter Check:** Connect DC voltmeter to TP5 (hot) and TP4 (ground). Feed generator output signal with line level (–1...+16 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9); all green LEDs are on.
DC voltmeter reading should be:
3.1 ±0.1 $V_{DC}$ (supply: +24 $V_{DC}$),
4.1 ±0.1 $V_{DC}$ (supply: +30 $V_{DC}$).

**Input Range:** Feed generator output signal with line level (1 kHz, –1...+16 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
Connect AC voltmeter to test points TP1 (hot) and TP4 (ground). Reading must be adjustable with RA3 to 290 ±10 $mV_{AC}$ for the complete input level range.

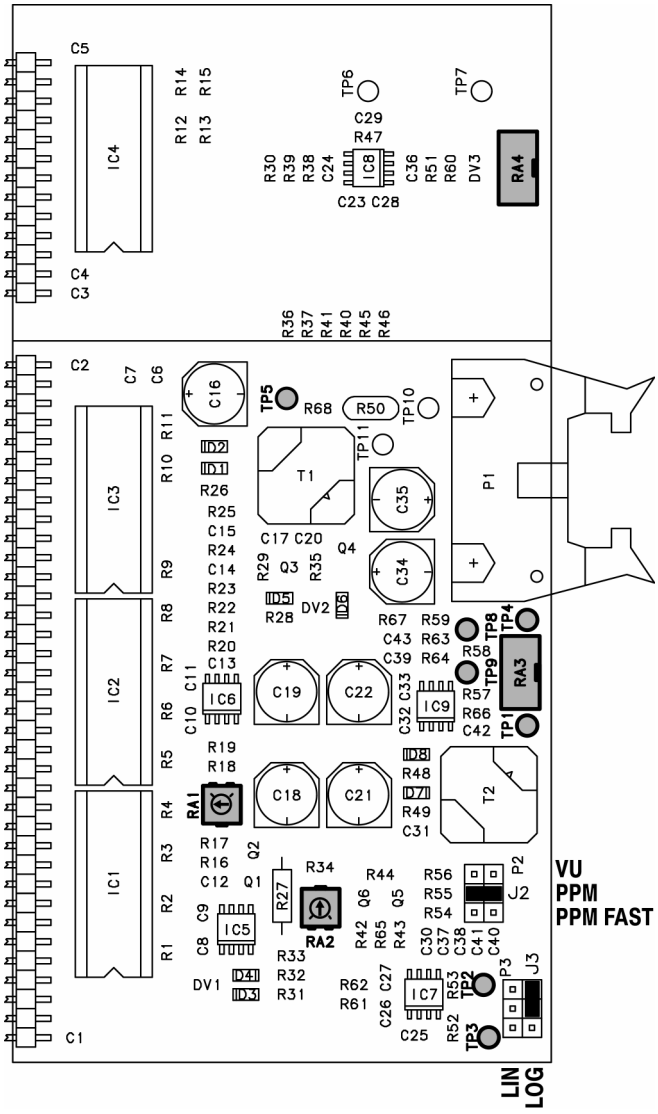
**Line Level:** Feed generator output signal with your line level (1 kHz, range: –1...+16 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
Adjust RA3 until all green LEDs are on. The red LEDs must be dark.
(TP3: 2.5 ±0.1 $V_{DC}$).

**Rectifier and Indication:** Set J2 to VU, J3 to LIN.
Feed generator output signal with your line level (1 kHz, usually 0 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
Connect AC voltmeter to test points TP1 (hot) and TP4 (ground). Adjust with RA3 to 290 ±10 $mV_{AC}$. All green LEDs must be on.
Connect DC voltmeter to test points TP2 (hot) and TP4 (ground); the meter should read –380 ±15 $mV_{DC}$.
Connect DC voltmeter to test points TP3 (hot) and TP4 (ground); the meter should read +2.575 ±0.100 $V_{DC}$. All green LEDs must be on.
*Check:* Set generator output for a DC voltmeter reading of 3.8 ±0.1 $V_{DC}$. All LEDs must be on. Set generator output for a DC voltmeter reading of 170 ±20 $mV_{DC}$. Only the lowest LED must be on.

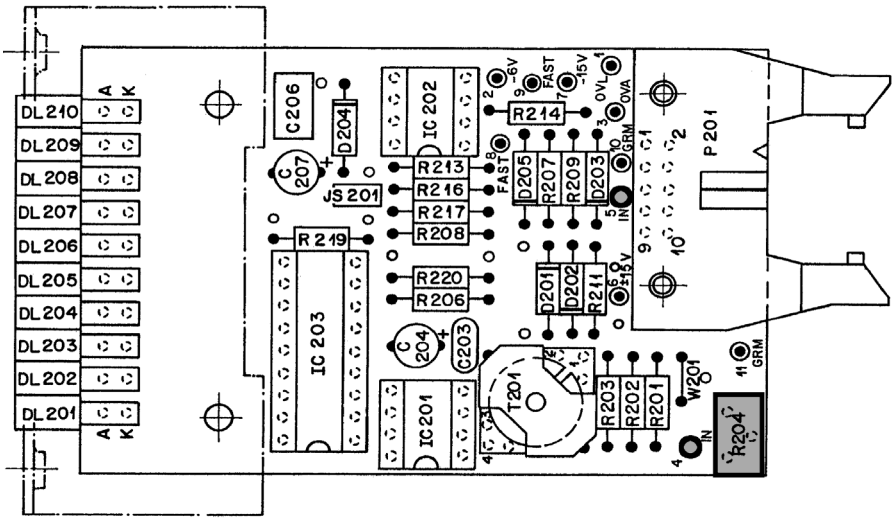
**Log Converter (PPM only):** Set J2 to PPM, J3 to LOG.
Feed generator output signal (1 kHz, +6 dBu) to the input (pins 5 and 7 of P1, or TP8 and TP9).
Connect DC voltmeter to test points TP2 (hot) and TP4 (ground). Adjust with RA3 to 1.18 ±0.05 $V_{DC}$.
RA1 and RA2: Basic setting according to the arrows in the diagram below.
Procedure:

1. Upper value setting: Adjust with RA2 to 3.06 ±0.10 $V_{DC}$. All green LEDs and four red LEDs must be on (+6 dB indication).
2. Set generator output to –24 dBu (i.e., attenuate the +6 dBu setting from above by 30 dB).
3. Lower value setting: Adjust with RA1 to 560 ±20 $mV_{DC}$. Only the four lowest green LEDs must be on (–24 dB indication).
4. These two settings are interdependent, therefore repeat steps 1...3 several times.

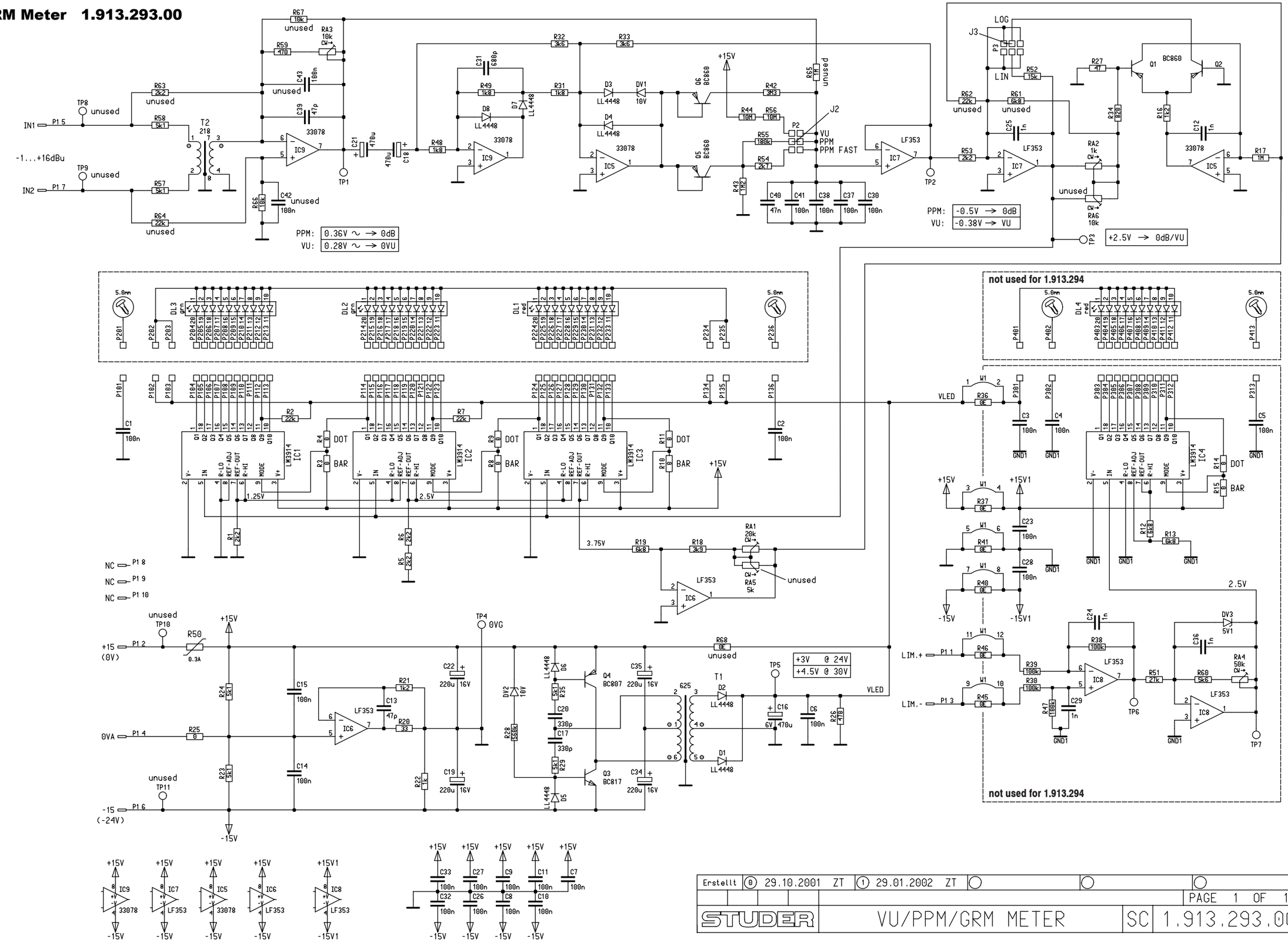
**GRM (if included):** Connect the Meter Unit to the console.
Feed a test signal via an input channel. Set the level on the master output to nominal level +20 dB.
Switch the limiter on.
Align with RA4 to a GRM indication of 20 dB.



**Line Level for 1.913.291:** Feed generator output signal with your line level (1 kHz, range: +6...+15 dBu) to the input (pins 5 and 7 of P201, or TP5 and TP4).
Adjust R204 until all green LEDs are on.
The red LEDs must be dark.

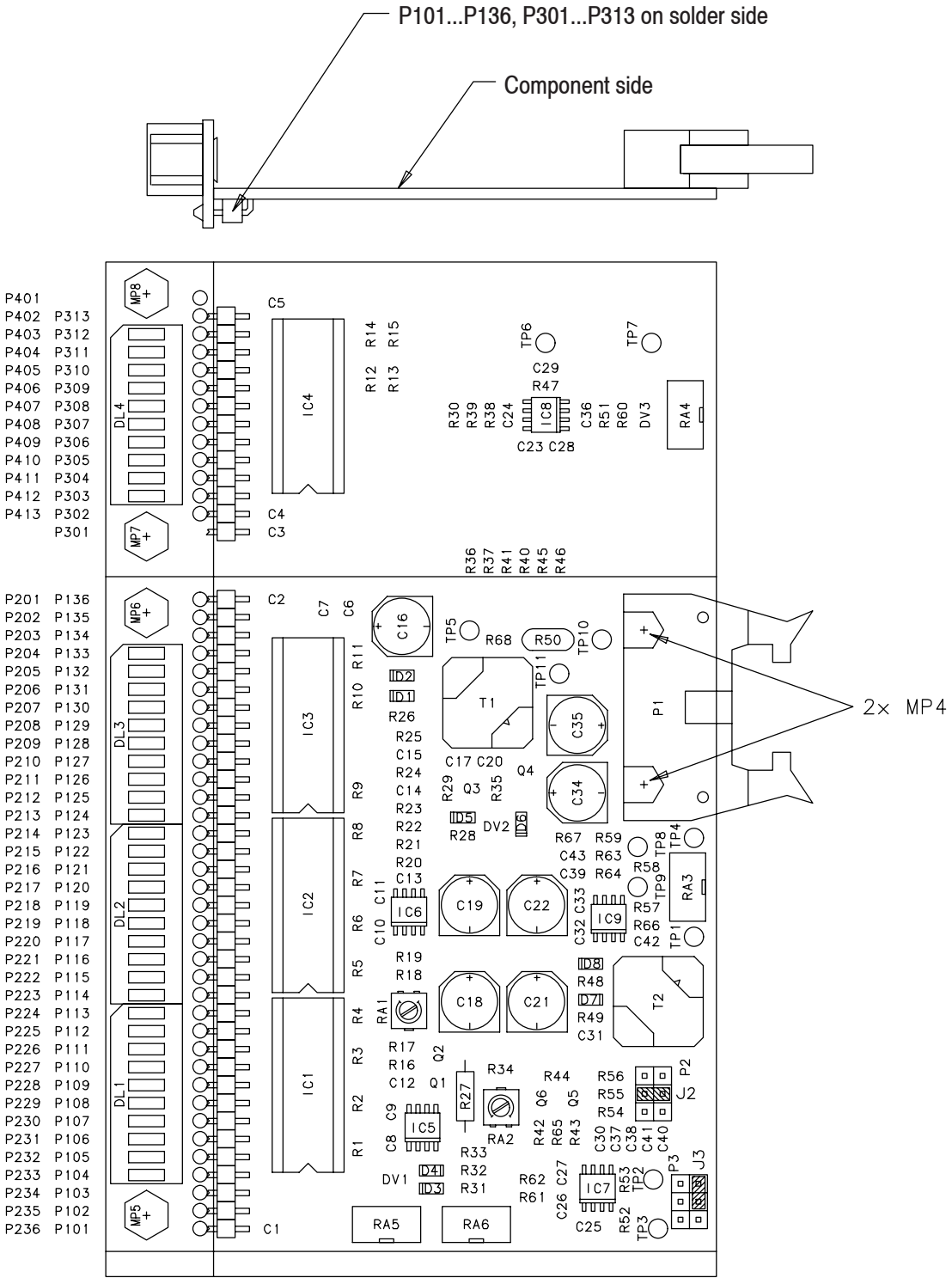


## VU/PPM/GRM Meter 1.913.293.00




| Erstellt | 0 29.10.2001 ZT | 1 29.01.2002 ZT | | | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| STUDER | VU/PPM/GRM METER | | | SC | 1.913.293.00 |

## VU/PPM/GRM Meter 1.913.293.00




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Accompanying documents: Zugehoerige Unterlagen: PL | General tolerance: Freimasstoleranz: . | Scale: Massstab: 1:1 | Edition Ausgabe | 29.10.2001 Date Datum | ZT Visa Gez. | ML Checked Gepr. | HW Seen Ges. | 0 Index |
| Substitute for: Ersatz fuer: . | | | Page: Seite: | 1 / 1 | | | | |
| STUDER REGENSDORF | Description: Benennung: VU/PPM/GRM METER , ESE | | Z | Number: Nummer: 1.913.293.00 | | | | |

# VU/PPM/GRM Meter 1.913.293.00 ( 4)



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 2 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 3 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 4 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 5 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 6 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 7 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 8 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 9 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 10 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 11 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 12 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 13 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, C0G, 0603 |
| 0 | C 14 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 15 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 16 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 | C 17 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, C0G, 0805 |
| 0 | C 18 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 | C 19 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 20 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, C0G, 0805 |
| 0 | C 21 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 | C 22 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 23 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 24 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 25 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 26 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 27 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 28 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 29 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 30 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 31 | 59.60.2369 | 1 pce | 680p | CER 50V, 5%, C0G, 0805 |
| 0 | C 32 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 33 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 34 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 35 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 36 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 37 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 38 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 39 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, C0G, 0603 |
| 0 | C 40 | 59.60.3333 | 1 pce | 47n | CER 50V, 10%, X7R, 0805 |
| 0 | C 41 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | D 1 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 2 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 3 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 4 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 5 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 6 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 7 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 8 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | DL 1 | 50.04.2150 | 1 pce | MV57164 | 10*LED-Bargraf rot diffus |
| 0 | DL 2 | 50.04.2161 | 1 pce | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 | DL 3 | 50.04.2161 | 1 pce | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 | DL 4 | 50.04.2150 | 1 pce | MV57164 | 10*LED-Bargraf rot diffus |
| 0 | DV 1 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 0 | DV 2 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 0 | DV 3 | 50.60.9010 | 1 pce | 5V1 | 5%, 0.2W, SOT 23 |
| 4 | DV 4 | 50.04.1112 | 1 pce | 5V1 | Zener, 5%, 0.5W, DO-35 |
| 0 | IC 1 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 2 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 3 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 4 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 5 | 50.61.0204 | 1 pce | MC33078 | Dual Op-Amp low noise |
| 0 | IC 6 | 50.61.0207 | 1 pce | LF353 | Dual Op-Amp JFET SO 8 |
| 3 | IC 7 | 50.61.0209 | 1 pce | LF412 | Dual Op-Amp JFET SO 8 |
| 0 | IC 8 | 50.61.0207 | 1 pce | LF353 | Dual Op-Amp JFET SO 8 |
| 1 | IC 9 | 50.61.0204 | 1 pce | MC33078 | Dual Op-Amp low noise |
| 0 | J 2 | 54.01.0021 | 1 pce | Jumper | 0.63*0.63mm, Au |
| 0 | J 3 | 54.01.0021 | 1 pce | Jumper | 0.63*0.63mm, Au |
| 0 | MP 1 | 1.913.293.11 | 1 pce | | VU/PPM/GRM METER PCB |
| 0 | MP 2 | 1.913.293.10 | 1 pce | | NR.-ETIKETTE 5 * 20 |
| 0 | MP 3 | 43.01.0108 | 1 pce | Label | ESE-Warnschild |
| 0 | MP 4 | 28.99.0119 | 2 pcs | | ROHRNIETE D 2.5*0.15* 9 |
| 0 | MP 5 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 0 | MP 6 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 0 | MP 7 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 0 | MP 8 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 4 | MP 9 | 43.10.0113 | 1 pce | D | Revisions-Etikette 5mm h'blau |
| 0 | P 1 | 54.14.2011 | 1 pce | 10p | Winkelstecker Au |
| 0 | P 2 | 54.11.0136 | 1 pce | 2*3p | Pin 0.63*0.63, RM2.54 |
| 0 | P 3 | 54.11.0136 | 1 pce | 2*3p | Pin 0.63*0.63, RM2.54 |
| 0 | P 102 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 103 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 104 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 105 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 106 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 107 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 108 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 109 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 110 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 111 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 112 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 113 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 114 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 115 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 116 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 117 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 118 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 119 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 120 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 121 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 122 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 123 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 124 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 125 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 126 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 127 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 128 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 129 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 130 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 131 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 132 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 133 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 134 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 135 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 136 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 301 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 302 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 303 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 304 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 305 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 306 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 307 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 308 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 309 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 310 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 311 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 312 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 313 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | Q 1 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | Q 2 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | Q 3 | 50.60.0050 | 1 pce | BC817-25 | NPN 45V 800mA SOT 23 |
| 0 | Q 4 | 50.60.1050 | 1 pce | BC807-25 | PNP 45V 800mA SOT 23 |
| 0 | Q 5 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | Q 6 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | R 1 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 2 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 3 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 4 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 5 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 6 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 7 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 8 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 9 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 10 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 11 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 12 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 | R 13 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 | R 14 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 15 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 16 | 57.60.1122 | 1 pce | 1k2 | MF, 1%, 0204, E24 |
| 0 | R 17 | 57.60.1105 | 1 pce | 1M0 | MF, 1%, 0204, E24 |
| 0 | R 18 | 57.60.1392 | 1 pce | 3k9 | MF, 1%, 0204, E24 |
| 0 | R 19 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 | R 20 | 57.60.1330 | 1 pce | 33R | MF, 1%, 0204, E24 |
| 0 | R 21 | 57.60.1122 | 1 pce | 1k2 | MF, 1%, 0204, E24 |
| 0 | R 22 | 57.60.1102 | 1 pce | 1k0 | MF, 1%, 0204, E24 |
| 0 | R 23 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 24 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 2 | R 25 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 26 | 57.60.1471 | 1 pce | 470R | MF, 1%, 0204, E24 |
| 0 | R 27 | 57.99.0252 | 1 pce | 47 | MF 10%, +4500ppm |
| 0 | R 28 | 57.60.1564 | 1 pce | 560k | MF, 1%, 0204, E24 |
| 0 | R 29 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 30 | 57.60.1104 | 1 pce | 100k | MF, 1%, 0204, E24 |
| 0 | R 31 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 | R 32 | 57.60.1362 | 1 pce | 3k6 | MF, 1%, 0204, E24 |
| 0 | R 33 | 57.60.1362 | 1 pce | 3k6 | MF, 1%, 0204, E24 |
| 0 | R 34 | 57.60.1821 | 1 pce | 820R | MF, 1%, 0204, E24 |
| 0 | R 35 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 36 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 37 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 38 | 57.60.1104 | 1 pce | 100k | MF, 1%, 0204, E24 |
| 0 | R 39 | 57.60.1104 | 1 pce | 100k | MF, 1%, 0204, E24 |
| 0 | R 40 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 41 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 42 | 57.60.1335 | 1 pce | 3M3 | MF, 1%, 0204, E24 |
| 0 | R 43 | 57.60.1125 | 1 pce | 1M2 | MF, 1%, 0204, E24 |
| 0 | R 44 | 57.60.1106 | 1 pce | 10M | MF, 1%, 0204, E24 |
| 0 | R 45 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 46 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 47 | 57.60.1104 | 1 pce | 100k | MF, 1%, 0204, E24 |
| 0 | R 48 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 | R 49 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 | R 50 | 57.92.7012 | 1 pce | 0.3A | PTC 60V |
| 0 | R 51 | 57.60.1273 | 1 pce | 27k | MF, 1%, 0204, E24 |
| 0 | R 52 | 57.60.1153 | 1 pce | 15k | MF, 1%, 0204, E24 |
| 0 | R 53 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 54 | 57.60.1272 | 1 pce | 2k7 | MF, 1%, 0204, E24 |
| 0 | R 55 | 57.60.1184 | 1 pce | 180k | MF, 1%, 0204, E24 |
| 0 | R 56 | 57.60.1106 | 1 pce | 10M | MF, 1%, 0204, E24 |
| 0 | R 57 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 58 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 59 | 57.60.1471 | 1 pce | 470R | MF, 1%, 0204, E24 |
| 0 | R 60 | 57.60.1562 | 1 pce | 5k6 | MF, 1%, 0204, E24 |
| 0 | R 66 | 57.60.1103 | 1 pce | 10k | MF, 1%, 0204, E24 |
| 0 | RA 1 | 58.60.0121 | 1 pce | 20k | SMD 20%, 0.25W, Cermet |
| 0 | RA 2 | 58.60.0113 | 1 pce | 1k0 | SMD 20%, 0.25W, Cermet |
| 0 | RA 3 | 58.01.9103 | 1 pce | 10k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 4 | 58.01.9503 | 1 pce | 50k | Cermet, 10%, 0.5W, vertical |
| 0 | T 1 | 1.022.625.00 | 1 pce | | SCHALTTRAFO 3:1 |
| 0 | T 2 | 1.022.218.00 | 1 pce | 1 : 1 | EINGANGSTRAFO 1 : 1 |
| 0 | TP 1 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 2 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 3 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 4 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |

## VU/PPM/GRM Meter 1.913.293.00 ( 4)



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | TP 5 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 6 | not used | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 7 | not used | 1 pce | | Stift d 1.5 * 5.5 löt |

End of List

**Comments:**

(01) Offset-voltage of IC 9 LF 353 too large
->replaced by MC
(02) R25 not used
(03) IC7 LF353 replaced by LF412
(04) DV4 added

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|

# VU/PPM Meter mod. 1.913.294.00 ( 3)



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 2 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 6 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 7 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 8 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 9 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 10 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 11 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 12 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 13 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, C0G, 0603 |
| 0 | C 14 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 15 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 16 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 | C 17 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, C0G, 0805 |
| 0 | C 18 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 | C 19 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 20 | 59.60.2361 | 1 pce | 330p | CER 50V, 5%, C0G, 0805 |
| 0 | C 21 | 59.68.0033 | 1 pce | 470u | EL 6V, 8.0*10.7 |
| 0 | C 22 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 25 | 59.60.2373 | 1 pce | 1n0 | CER 50V, 5%, C0G, 0805 |
| 0 | C 26 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 27 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 30 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 31 | 59.60.2369 | 1 pce | 680p | CER 50V, 5%, C0G, 0805 |
| 0 | C 32 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 33 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 34 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 35 | 59.68.0073 | 1 pce | 220u | EL 16V, 8.0*10.7 |
| 0 | C 37 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 38 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | C 39 | 59.60.2241 | 1 pce | 47p | CER 50V, 5%, C0G, 0603 |
| 0 | C 40 | 59.60.3333 | 1 pce | 47n | CER 50V, 10%, X7R, 0805 |
| 0 | C 41 | 59.60.3337 | 1 pce | 100n | CER 50V, 10%, X7R, 0805 |
| 0 | D 1 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 2 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 3 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 4 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 5 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 6 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 7 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | D 8 | 50.60.8001 | 1 pce | 4448 | 200mA 75V 4ns SOD 80 |
| 0 | DL 1 | 50.04.2150 | 1 pce | MV57164 | 10*LED-Bargraf rot diffus |
| 0 | DL 2 | 50.04.2161 | 1 pce | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 | DL 3 | 50.04.2161 | 1 pce | GRN | DLZ MV 54 164,LTA1000G 10*D GN |
| 0 | DV 1 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 0 | DV 2 | 50.60.9017 | 1 pce | 10V | 5%, 0.2W, SOT 23 |
| 3 | DV 4 | 50.04.1112 | 1 pce | 5V1 | Zener, 5%, 0.5W, DO-35 |
| 0 | IC 1 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 2 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 3 | 50.11.0119 | 1 pce | LM3914 | IC LM 3914 N, |
| 0 | IC 5 | 50.61.0204 | 1 pce | MC33078 | Dual Op-Amp low noise |
| 0 | IC 6 | 50.61.0207 | 1 pce | LF353 | Dual Op-Amp JFET SO 8 |
| 0 | IC 7 | 50.61.0207 | 1 pce | LF353 | Dual Op-Amp JFET SO 8 |
| 1 | IC 9 | 50.61.0204 | 1 pce | MC33078 | Dual Op-Amp low noise |
| 0 | J 2 | 54.01.0021 | 1 pce | Jumper | 0.63*0.63mm, Au |
| 0 | J 3 | 54.01.0021 | 1 pce | Jumper | 0.63*0.63mm, Au |
| 0 | MP 1 | 1.913.293.11 | 1 pce | | VU/PPM/GRM METER PCB |
| 0 | MP 2 | 1.913.294.10 | 1 pce | | NR.-ETIKETTE 5 * 20 |
| 0 | MP 3 | 43.01.0108 | 1 pce | Label | ESE-Warnschild |
| 0 | MP 4 | 28.99.0119 | 2 pcs | | ROHRNIETE D 2.5*0.15* 9 |
| 0 | MP 5 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 0 | MP 6 | 1.010.057.22 | 1 pce | M3*7.4 | Nietmutter sw 6 |
| 3 | MP 7 | 43.10.0112 | 1 pce | C | Revisions-Etikette 5mm h'blau |
| 0 | P 1 | 54.14.2011 | 1 pce | 10p | Winkelstecker Au |
| 0 | P 2 | 54.11.0136 | 1 pce | 2*3p | Pin 0.63*0.63, RM2.54 |
| 0 | P 3 | 54.11.0136 | 1 pce | 2*3p | Pin 0.63*0.63, RM2.54 |
| 0 | P 101 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 102 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 103 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 104 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 105 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 106 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 107 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 108 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 109 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 110 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 111 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 112 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 113 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 114 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 115 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 116 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 117 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 118 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 119 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 120 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 121 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 122 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 123 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 124 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 125 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 126 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 127 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 128 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 129 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 130 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 131 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 132 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 133 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 134 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 135 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |
| 0 | P 136 | 54.11.0125 | 1 pce | 1p | Pin, 1reihig, winkel |

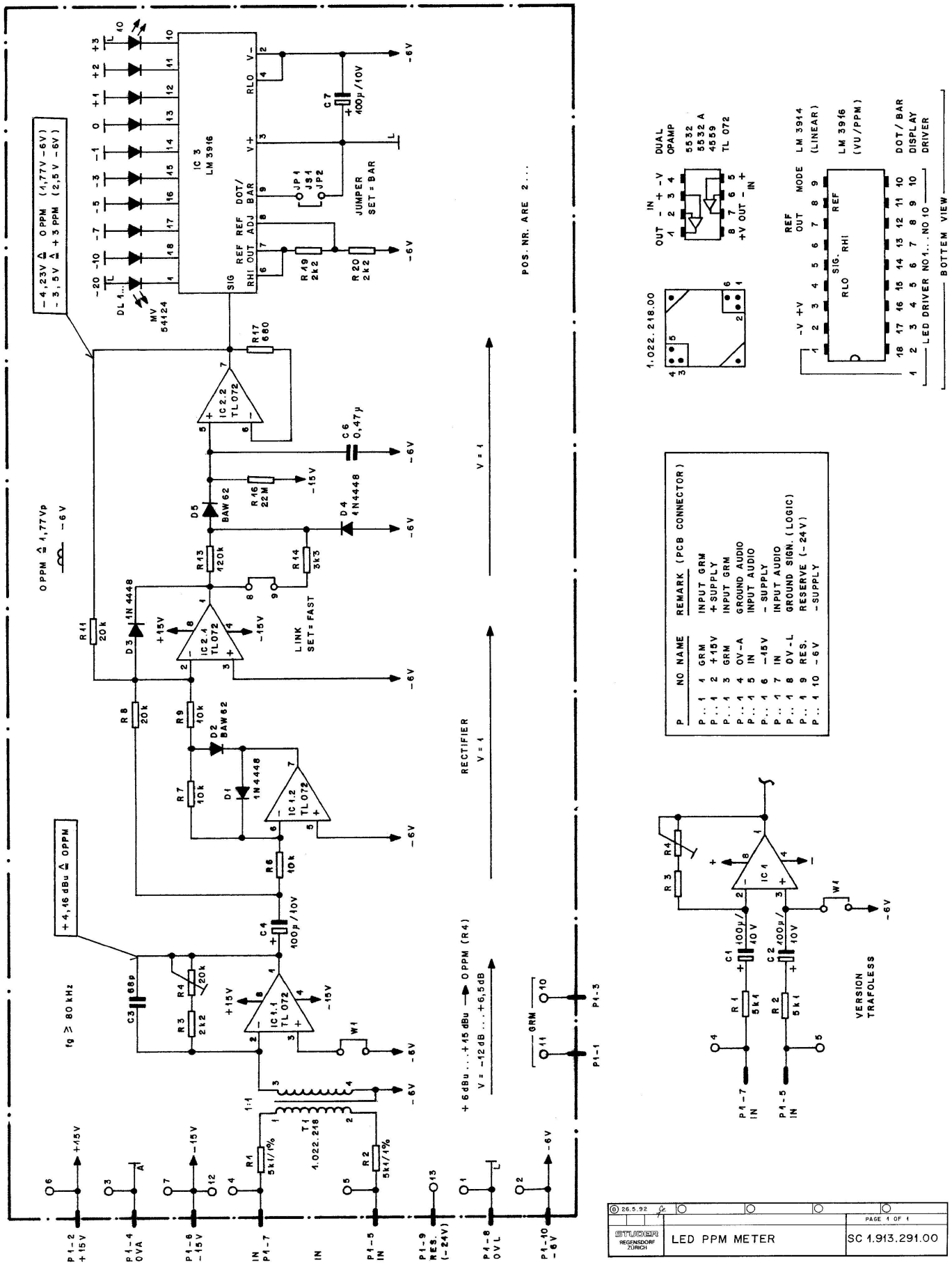
| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | Q 1 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | Q 2 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | Q 3 | 50.60.0050 | 1 pce | BC817-25 | NPN 45V 800mA SOT 23 |
| 0 | Q 4 | 50.60.1050 | 1 pce | BC807-25 | PNP 45V 800mA SOT 23 |
| 0 | Q 5 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | Q 6 | 50.60.1002 | 1 pce | BC860C | PNP 45V 100mA SOT 23 |
| 0 | R 1 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 2 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 3 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 4 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 5 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 6 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 7 | 57.60.1223 | 1 pce | 22k | MF, 1%, 0204, E24 |
| 0 | R 8 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 9 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 10 | 57.60.1000 | 1 pce | 0R0 | MF, 0204 |
| 0 | R 11 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 16 | 57.60.1122 | 1 pce | 1k2 | MF, 1%, 0204, E24 |
| 0 | R 17 | 57.60.1105 | 1 pce | 1M0 | MF, 1%, 0204, E24 |
| 0 | R 18 | 57.60.1392 | 1 pce | 3k9 | MF, 1%, 0204, E24 |
| 0 | R 19 | 57.60.1682 | 1 pce | 6k8 | MF, 1%, 0204, E24 |
| 0 | R 20 | 57.60.1330 | 1 pce | 33R | MF, 1%, 0204, E24 |
| 0 | R 21 | 57.60.1122 | 1 pce | 1k2 | MF, 1%, 0204, E24 |
| 0 | R 22 | 57.60.1102 | 1 pce | 1k0 | MF, 1%, 0204, E24 |
| 0 | R 23 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 24 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 2 | R 25 | not used | 1 pce | 0R0 | MF, 0204 |
| 0 | R 26 | 57.60.1471 | 1 pce | 470R | MF, 1%, 0204, E24 |
| 0 | R 27 | 57.99.0252 | 1 pce | 47 | MF 10%, +4500ppm |
| 0 | R 28 | 57.60.1564 | 1 pce | 560k | MF, 1%, 0204, E24 |
| 0 | R 29 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 31 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 | R 32 | 57.60.1362 | 1 pce | 3k6 | MF, 1%, 0204, E24 |
| 0 | R 33 | 57.60.1362 | 1 pce | 3k6 | MF, 1%, 0204, E24 |
| 0 | R 34 | 57.60.1821 | 1 pce | 820R | MF, 1%, 0204, E24 |
| 0 | R 35 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 42 | 57.60.1335 | 1 pce | 3M3 | MF, 1%, 0204, E24 |
| 0 | R 43 | 57.60.1125 | 1 pce | 1M2 | MF, 1%, 0204, E24 |
| 0 | R 44 | 57.60.1106 | 1 pce | 10M | MF, 1%, 0204, E24 |
| 0 | R 48 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 | R 49 | 57.60.1182 | 1 pce | 1k8 | MF, 1%, 0204, E24 |
| 0 | R 50 | 57.92.7012 | 1 pce | 0.3A | PTC 60V |
| 0 | R 52 | 57.60.1153 | 1 pce | 15k | MF, 1%, 0204, E24 |
| 0 | R 53 | 57.60.1222 | 1 pce | 2k2 | MF, 1%, 0204, E24 |
| 0 | R 54 | 57.60.1272 | 1 pce | 2k7 | MF, 1%, 0204, E24 |
| 0 | R 55 | 57.60.1184 | 1 pce | 180k | MF, 1%, 0204, E24 |
| 0 | R 56 | 57.60.1106 | 1 pce | 10M | MF, 1%, 0204, E24 |
| 0 | R 57 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 58 | 57.60.1512 | 1 pce | 5k1 | MF, 1%, 0204, E24 |
| 0 | R 59 | 57.60.1471 | 1 pce | 470R | MF, 1%, 0204, E24 |
| 0 | R 66 | 57.60.1103 | 1 pce | 10k | MF, 1%, 0204, E24 |
| 0 | RA 1 | 58.60.0121 | 1 pce | 20k | SMD 20%, 0.25W, Cermet |
| 0 | RA 2 | 58.60.0113 | 1 pce | 1k0 | SMD 20%, 0.25W, Cermet |
| 0 | RA 3 | 58.01.9103 | 1 pce | 10k | Cermet, 10%, 0.5W, vertical |
| 0 | T 1 | 1.022.625.00 | 1 pce | | SCHALTTRAFO 3:1 |
| 0 | T 2 | 1.022.218.00 | 1 pce | 1 : 1 | EINGANGSTRAFO 1 : 1 |
| 0 | TP 1 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 2 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 3 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 4 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |
| 0 | TP 5 | 54.02.0471 | 1 pce | | Stift d 1.5 * 5.5 löt |

**End of List**

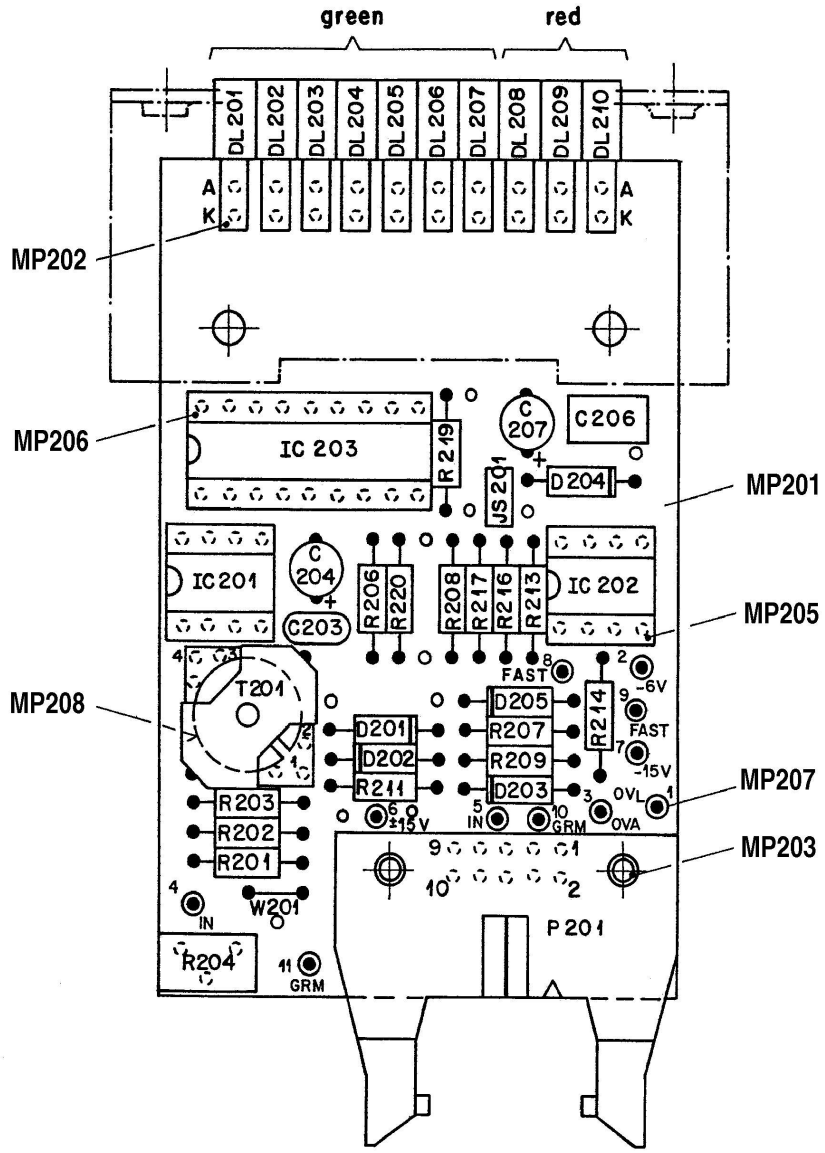
**Comments:**

(01) Offset-voltage of IC 9 LF 353 too large
->replaced by MC 33078
(02) R25 not used
(03) DV4 added

## LED PPM Meter (10 LED) 1.913.291.00



## LED PPM Meter (10 LED) 1.913.291.00




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Werkstoff | Norm-Nr.: | Oberfläche | Güte: | Änderung | | | | ③ |
| | DIN-Bez.: | | Beh.: | | | | | ② |
| | Abmessung: | | | | | | | ① |
| Zugehörige Unterlagen: PL | | Freimasstoleranz: ± | Maßstab: | Ausgabe | 22.10.87 | A.Ho | | ⓪ |
| | | | | | Datum | Gez. | Gepr. | Ges. | Index |
| Ersatz für: | | Ersetzt durch: | | Kopie für: | | | | |
| STUDER REGENSDORF ZÜRICH | Benennung: LED PPM METER ESE | | | Nummer: 1.913.291-00 | | | | |

# LED PPM Meter (10 LED) 1.913.291.00 ( 1)



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 201 | not used | | not used | not used |
| 0 | C 202 | not used | | not used | not used |
| 0 | C 203 | 59.34.2680 | | 68p | CER 63V, 5%, N150 |
| 0 | C 204 | 59.22.3101 | | 100u | EL 10V 20% RM5 |
| 0 | C 205 | not used | | not used | not used |
| 0 | C 206 | 59.06.5474 | | 470n | PETP, 63V, 5%, RM5 |
| 0 | C 207 | 59.22.3101 | | 100u | EL 10V 20% RM5 |
| 0 | D 201 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 202 | 50.04.0132 | | BAW62 | D BAW 62 |
| 1 | D 203 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 1 | D 204 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 205 | 50.04.0132 | | BAW62 | D BAW 62 |
| 0 | D 206 | not used | | not used | not used |
| 0 | DL 201 | 50.04.2146 | | MV54124A | LED green |
| 0 | DL 202 | 50.04.2146 | | MV54124A | LED green |
| 0 | DL 203 | 50.04.2146 | | MV54124A | LED green |
| 0 | DL 204 | 50.04.2146 | | MV54124A | LED green |
| 0 | DL 205 | 50.04.2146 | | MV54124A | LED green |
| 0 | DL 206 | 50.04.2146 | | MV54124A | LED green |
| 0 | DL 207 | 50.04.2146 | | MV54124A | LED green |
| 0 | DL 208 | 50.04.2119 | | MV57124A | LED red |
| 0 | DL 209 | 50.04.2119 | | MV57124A | LED red |
| 0 | DL 210 | 50.04.2119 | | MV57124A | LED red |
| 0 | IC 201 | 50.09.0101 | | TL072 | Dual op-amp biFET |
| 0 | IC 202 | 50.09.0101 | | TL072 | Dual op-amp biFET |
| 0 | IC 203 | 50.11.0144 | | LM3916 | LED Bar/Dot driver |
| 0 | JP 201 | 54.01.0020 | | 1p | Pin, 1reihig, gerade |
| 0 | JP 202 | 54.01.0020 | | 1p | Pin, 1reihig, gerade |
| 0 | JS 201 | 54.01.0021 | | Jumper | 0.63*0.63mm, Au |
| 0 | MP 201 | 1.913.290.11 | 1 pce | | LED METER PCB |
| 0 | MP 202 | 1.010.012.50 | 10 pcs | | LED-spacer universal |
| 0 | MP 203 | 28.99.0119 | 2 pcs | | ROHRNIETE D 2.5*0.15* 9 |
| 0 | MP 204 | not used | | not used | not used |
| 0 | MP 205 | 53.03.0166 | 2 pcs | 8p | DIL-socket 0.3" |
| 0 | MP 206 | 53.03.0175 | 1 pce | 18p | DIL 0.3", löt, gerade |
| 0 | MP 207 | 54.02.0471 | 11 pcs | | Stift d 1.5 * 5.5 löt |
| 0 | MP 208 | 1.010.004.61 | 1 pce | RM5 | Isolierscheibe d=10 |
| 0 | P 201 | 54.14.2011 | | 10p | Winkelstecker Au |
| 0 | R 201 | 57.11.3512 | | 5k1 | MF, 1%, 0207 |
| 0 | R 202 | 57.11.3512 | | 5k1 | MF, 1%, 0207 |
| 0 | R 203 | 57.11.4222 | | 2k2 | MF, 2%, 0207 |
| 0 | R 204 | 58.01.9203 | | 20k | Cermet, 10%, 0.5W, vertical |
| 0 | R 205 | not used | | not used | not used |
| | | | | *replaced by W 201* | |
| 0 | R 206 | 57.11.4103 | | 10k | MF, 2%, 0207 |
| 0 | R 207 | 57.11.4103 | | 10k | MF, 2%, 0207 |
| 0 | R 208 | 57.11.3203 | | 20k | MF, 1%, 0207 |
| 0 | R 209 | 57.11.4103 | | 10k | MF, 2%, 0207 |
| 0 | R 210 | not used | | not used | not used |
| 0 | R 211 | 57.11.3203 | | 20k | MF, 1%, 0207 |
| 0 | R 212 | not used | | not used | not used |
| | | | | *replaced by D 203* | |
| 0 | R 213 | 57.11.4823 | | 82k | MF, 2%, 0207 |
| 0 | R 214 | 57.11.4332 | | 3k3 | MF, 2%, 0207 |
| 0 | R 215 | not used | | not used | not used |
| | | | | *replaced by D 205* | |
| 0 | R 216 | 57.11.6226 | | 22M | MF, 10%, 0207 |
| 0 | R 217 | 57.11.4681 | | 680R | MF, 2%, 0207 |
| 0 | R 218 | not used | | not used | not used |
| 0 | R 219 | 57.11.4222 | | 2k2 | MF, 2%, 0207 |
| 0 | R 220 | 57.11.4222 | | 2k2 | MF, 2%, 0207 |
| 0 | R 221 | not used | | not used | not used |
| 0 | T 201 | 1.022.218.00 | | 1 : 1 | EINGANGSTRAFO 1 : 1 |
| 0 | W 201 | 1.010.321.64 | | RM5.0 | U shaped wire 0.6mm |

**End of List**

**Comments:**

(01) D203, D204 changed

# Level meter VU/PPM 30 LED and gain reduction meter 10 LED

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2. Functional description ..... 3
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4. Block diagram ..... 4
5. Alignment instruction VU/PP meter ..... 4
6. Maintenance instructions ..... 5
7. Gain reduction meter ..... 6
8. Diagrams

VU/PPM 30 LED
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- Component layout, position list ..... 8

Gain reduction meter
- Diagram ..... 9
- Component layout, position list ..... 10

## SCOPE OF VALIDITY

This manual applies to the following modules:

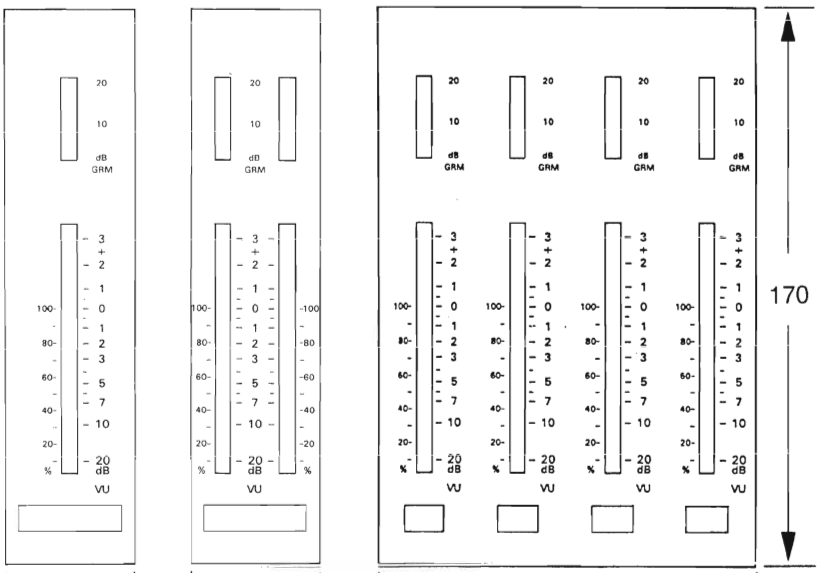
| Display | 1 Channel | 2 Channels | 4 Channels | PCB Nr. |
|---|---|---|---|---|
| PPM | 1.913.101 | 1.913.105 | 1.913.321 | 1.913.295 |
| VU | 1.913.102 | 1.913.106 | 1.913.322 | 1.913.295 |
| PPM / GRM | 1.913.103 | 1.913.107 | 1.913.323 | 1.913.295/297 |
| VU / GRM | 1.913.104 | 1.913.108 | 1.913.324 | 1.913.295/297 |

## 1. General

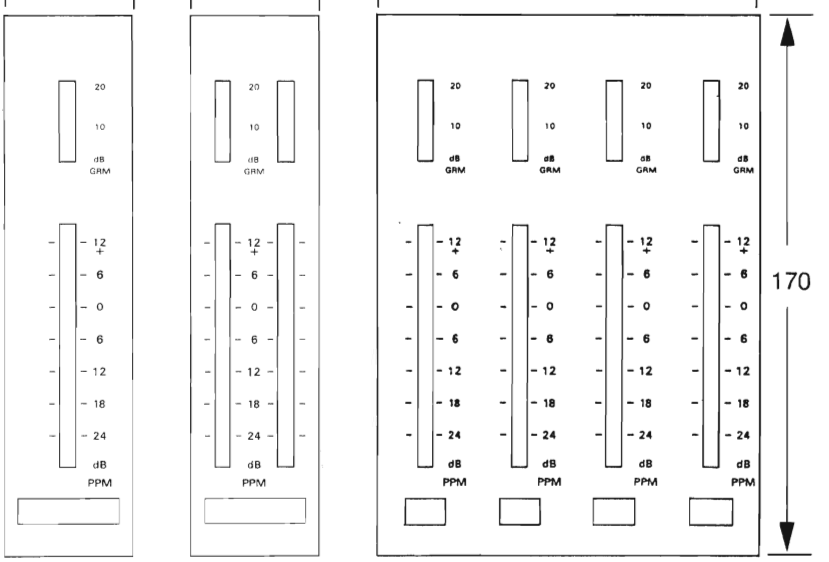
The **STUDER output meter VU-PPM 30 LED** has been developed for installation into the display panel of STUDER mixing consoles. Instruments with VU (volume unit) or PPM (peak program meter ) characteristic are available. In place of the bar indication, an optional dot indication is available.
The instruments listed below are equipped with the two PCBs 1.913.295 (VU/PPM) and 1.913.297 (GRM) corresponding to the table on page 1. The circuit diagram relating to the corresponding circuit board number should be consulted.

### «Volume Unit Meters»

1.913.102* 1.913.106* 1.913.322*
1.913.104 1.913.108 1.913.324



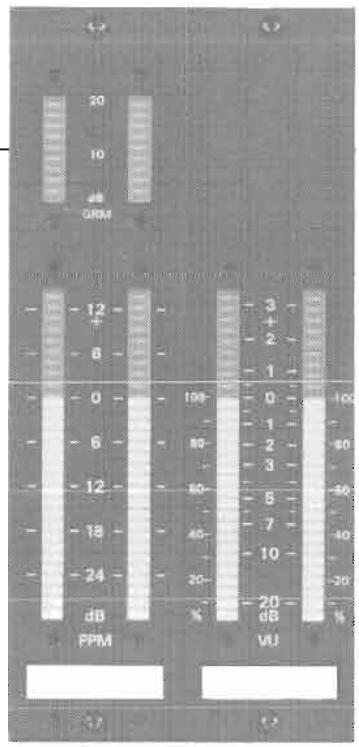

### «Peak Program Meters»




1.913.101* 1.913.105* 1.913.321*
1.913.103 1.913.107 1.913.323

* = Version without gain reduction meter (GRM)

VU / PPM 30 LED




## 2. Functional description

**PPM:** The peak program meter is a quasi-peak value instrument with a long release time. When a signal voltage corresponding to a level of 0 dB is applied for 10 ms, the resulting indication should be -1 dB.
The desired decay time to -20dB is 1.7 s.

**VU-meter:** The VU-meter indicates signals according to the standard defined by ANSI 1954. When a signal with a duration of 300 ms is applied, the indication should be 99% of the reference value. The rise and decay time on the VU-meter are identical. The factory set lead is 6 dB.

**Gain reduction meter:** When the limiter/compressor is switched on, the GRM indicates the magnitude of the gain reduction.

## 3. Technical data

PCB 1.913.295

**General:**

**0 dBu ≙ 0.775 $V_{eff}$**

| | | | | |
|---|---|---|---|---|
| Input sensitivity of the reference indication: | | -1 dBu... +16 dBu | | |
| Input impedance | | >10 kΩ | | |
| Supply: | | DC ±15 V | or | DC +24 V |
| Current consumption: | Quiescent | 45mA | / | 35 mA |
| | Medium load | 58mA | / | 56mA |
| | Full load | 80mA | / | 80 mA |

**VU-meter:**

| | |
|---|---|
| Indicating range: | -20VU... +30VU |
| Accuracy: | ±1 segment |
| (precond.:-10VU... +3VU/0°...50°C/31.5Hz...16kHz) | |
| Response time to -1VU: | 207(±30)ms |

**PP-meter:**

| | |
|---|---|
| Indicating range: | -30dBu... +15dBu |
| Accuracy: | ±1 segment |
| (precond.:-30dB... +15dB/0°...50°C/31.5Hz...16kHz) | |
| **Dynamic behavior:** | |
| Jumper normal: 0dB for 10 ms | →indication: -1dB ±0.5dB |
| Jumper normal: 0dB for 3ms | →indication: -4dB ±1dB |
| Jumper fast: 0dB for ~100µs | →indication: 1dB |
| Decay time 0...-20dB: | 1.7(±0.3)s |

**Circuit board sizes:**

| | |
|---|---|
| Height x depth, with connector: | 96 mm x 95 mm |
| Width: | 18 mm |
| Center between M3 mounting holes: | 85.1 mm (3.35") |

## 4. Block diagram

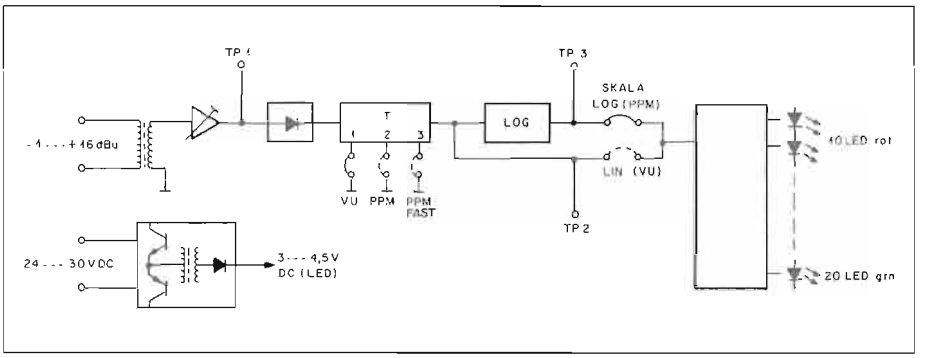



**Fig. 2** **VU-PPM block diagram:** The settings VU/PPM/PPM fast or lin/log are established with the jumpers JS 1 and JS 2 respectively (see Fig. 3)

## 5. Alignment instructions VU/PP meter PCB 1.913.295

**Measuring instruments:**

AC voltmeter Ri ≥ 20 kΩ
DC voltmeter Ri ≥100 kΩ, preferably digital VM
Generator, 31.5Hz...16kHz, 0...16dBu; attenuator with 10dB increments.

**Alignment elements**

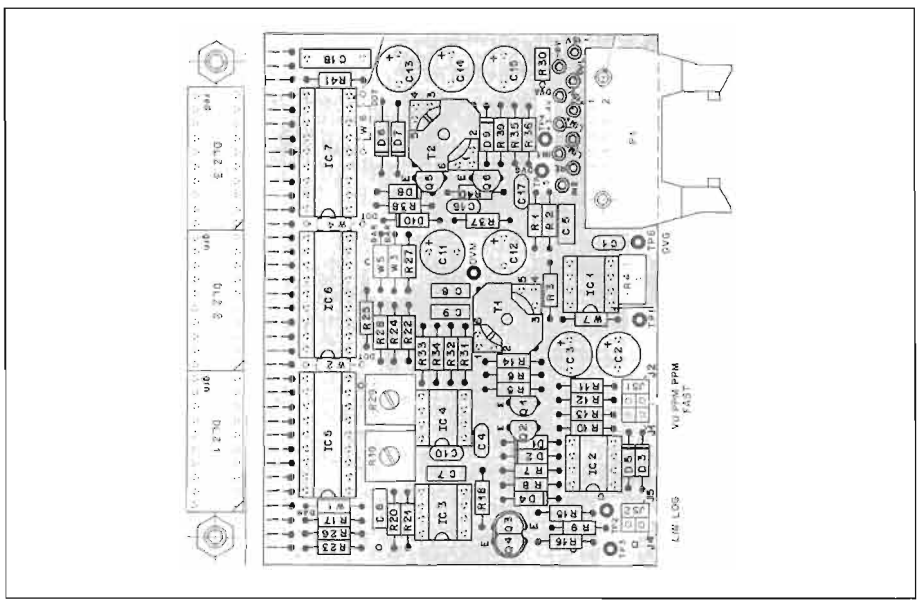


**Fig. 3** Alignment elements of the VU/PPM 30 LED

**Aligning the line level:**

From the generator feed line level (-1dBu ... +16dBu) to the input. Align with R4 until all green LEDs are light and the red LEDs are still dark.
[ on TP3: 2.5(±0.1)V ]

## 6. Maintenance instructions PCB 1.913.295

**Test input range:**

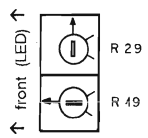
**Generator**: 1 kHz on input, level: -1dBu ... +16 dBu
**AC VM**: Hot to TP 1, cold to TP 6 (0V G)
$U_{TP1}$ adjustable with R4 to 290(±10)mV AC

**Rectifier and indication:**

Both jumpers set to the VU/LIN position.
**Generator**: 1kHz with 0dBu level on input
$U_{TP1}$: Adjust with R4 to 290(±2)mV AC. All green LEDs must be light.
**DC VM**: Hot to TP2, cold to TP6.
$U_{TP2}$ = -380(±15)mV DC
**DC VM**: Hot to TP3, cold to TP6
$U_{TP3}$ = +2.575(±0.1)V DC. All green LEDs are light.
**Check**: Adjust the generator level in such a way that:
$U_{TP3}$ = +3.8(±0.1)V DC. All diodes are light.
$U_{TP3}$ = +0.17(±0.02)V DC. Only the lowest green LED is light.

**Logarithmation (PPM):**

Both jumpers are set to PPM/LOG.
**Generator**: 1kHz with +6dBu level on input.
Set $U_{TP2}$ with R4 to 1.18(±0.05V) DC.
The two trimmers have the following basic setting:




**Alignment procedure:**

**DC VM**: hot to TP3, cold to TP6.
**A:** Align the upper value with R19. Desired: $U_{TP3}$ = 3.06(±0.10)V.
All green LEDs and 4 red LEDs are light. Indication +6dB.
**B:** Attenuation by 30 dB with attenuator.
**C:** Align the lower value with R29. Desired: $U_{TP3}$ = 0.56(±0.02)V.
4 green LEDs are light. Indication -24 dB
Repeat the procedure A → B → C → A → ... several times.

**DC/DC converter:**

To check, connect the DC VM hot to TP4, cold to TP5. Generator with line level on input causes all green LEDs to light.

| | | |
|---|---|---|
| Supply voltage: | +24 V DC | →TP4 = 3.1(±0.1)V |
| | +30 V DC | →TP4 = 4.1(±0.1)V |

## 7. Gain reduction meter PCB 1.913.297

**Connecting the GRM:**

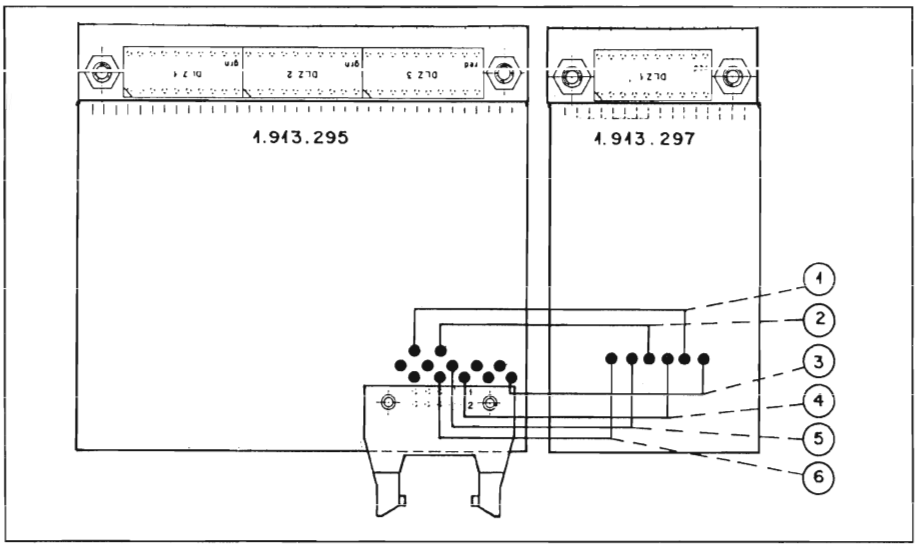


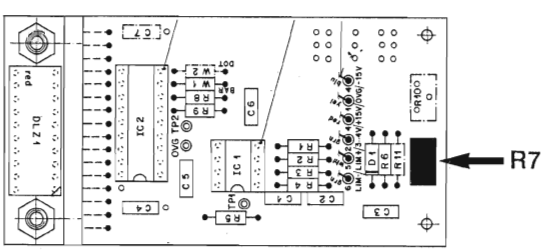

**Fig. 4** Connection GRM - VU/PPM.

**Conductor assignment of the connection cable:**

| | Color | Signal |
|---|---|---|
| 1 | yellow | 0 VG |
| 2 | green | +3... +4,5 V |
| 3 | blue | - 15 V |
| 4 | red | +15 V |
| 5 | white | LIM + |
| 6 | grey | LIM - |

**Aligning the GRM:**

- Limiter switched off
- Feed a test signal via an input channel. Set the level on the master output to nominal level +20 dB.
- Switch on the limiter
- Align with R7 to a GRM indication of +20 dB.



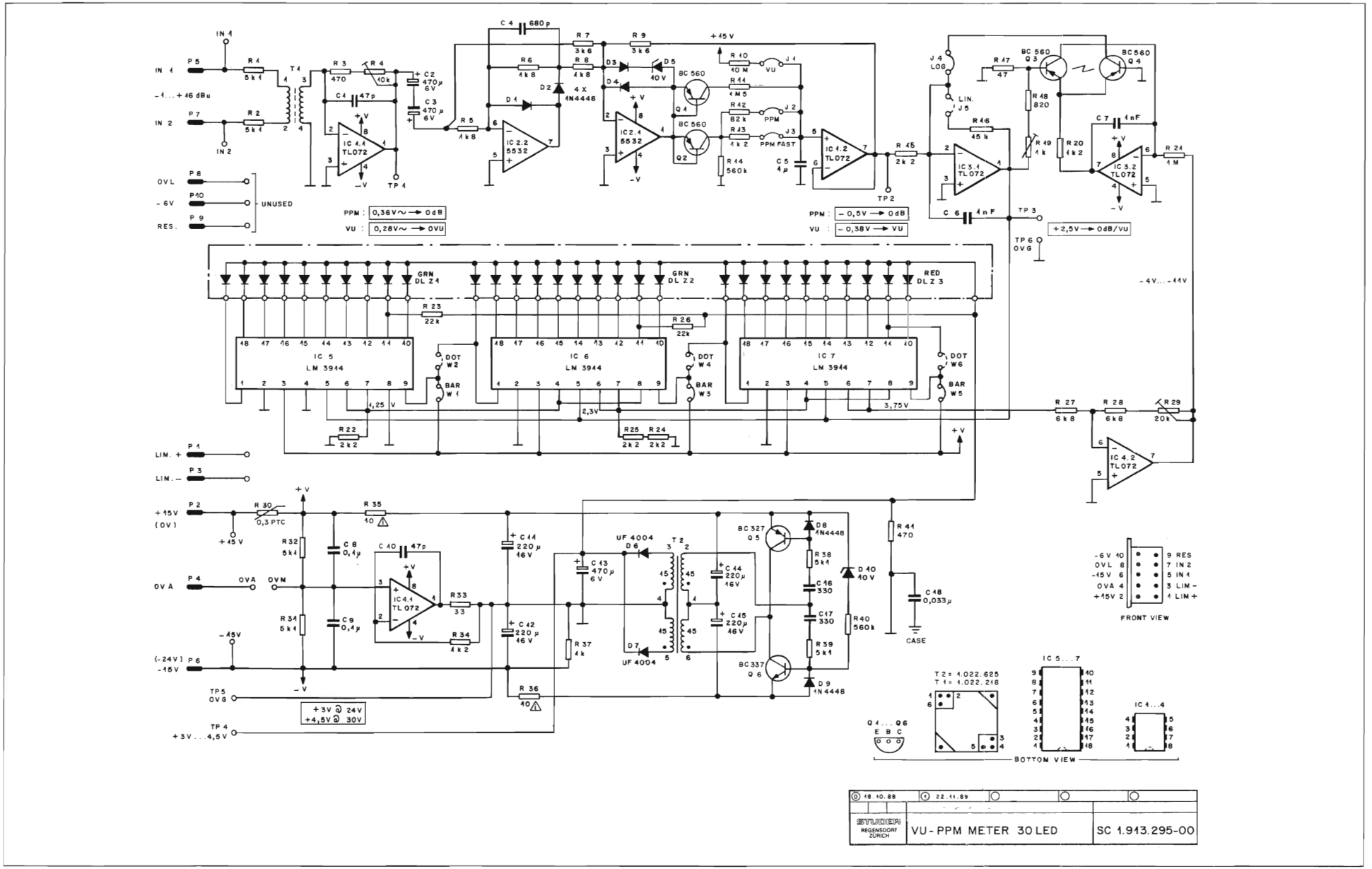

**Technical data:**

**Supply** The GRM indicator is supplied by the switching regulator of the basic unit 1.913.295: 24 ... 30 VDC.

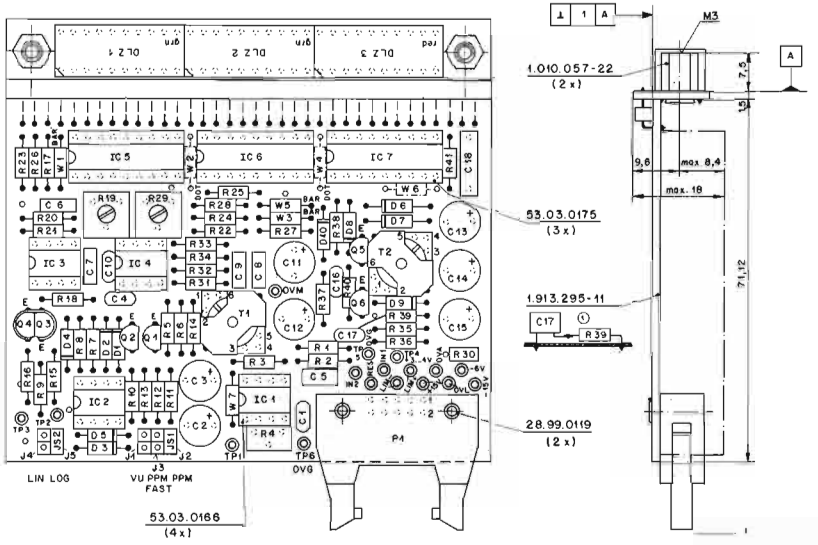
| | | | |
|---|---|---|---|
| | Current consumption: | quiescent | 10mA |
| | | full load | 25mA |
| **Indication** | Voltage range: | min. control | 0V ... +2V DC |
| | | max. control | 0V ... +11V DC |
| **Circuit board dimensions:** | Height x depth: | | 45 mm x 85 mm |
| | Width: | | 18 mm |
| | Center between M3 mounting holes: | | 39.4 mm (1.55") |

## 8. Diagrams / Schemata

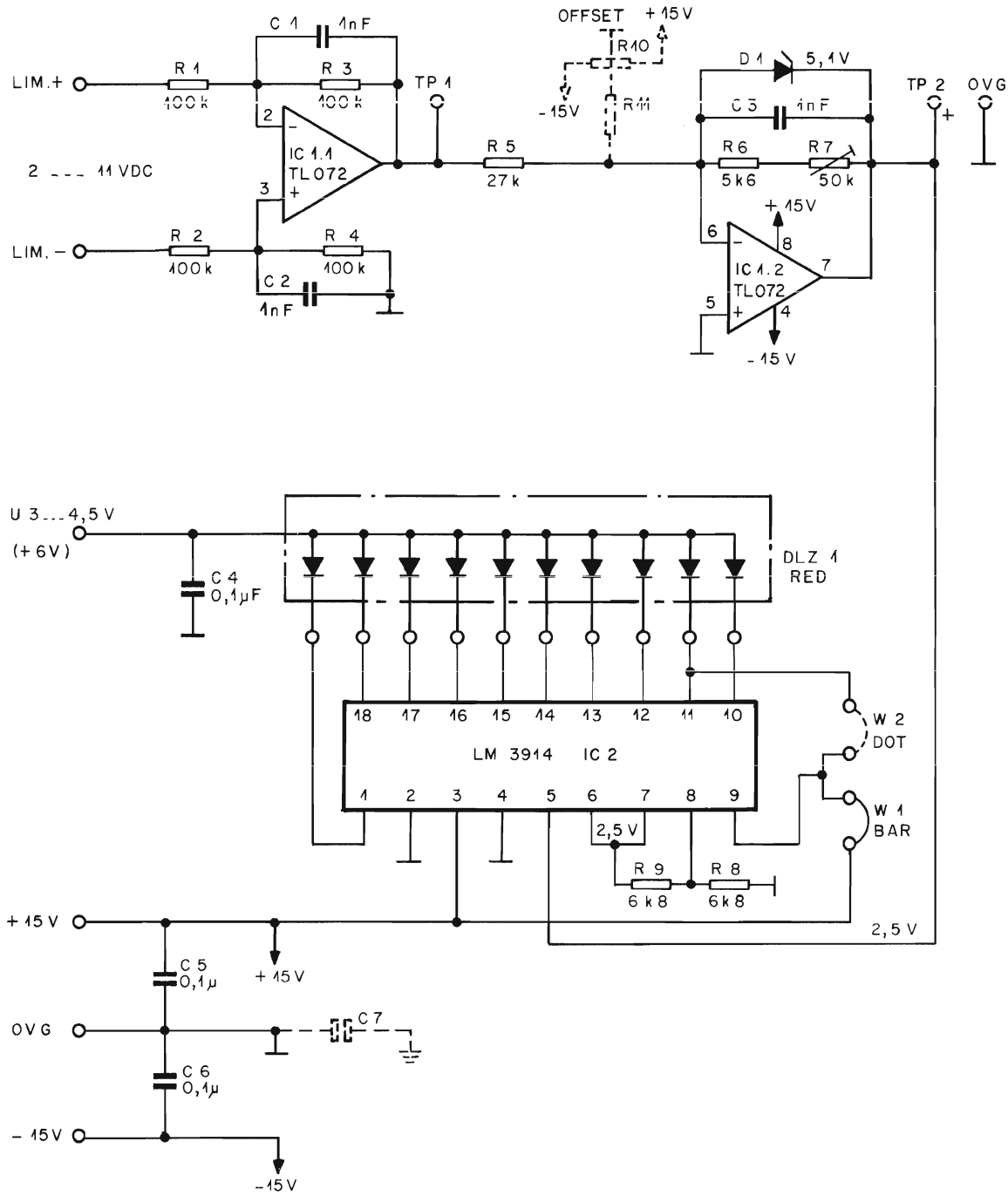
VU- / PP - Meter 30 LED 1.913.295.00



## VU- / PP - Meter 30 LED 1.913.295.00



## Gain Reduction Meter 1.913.297.00

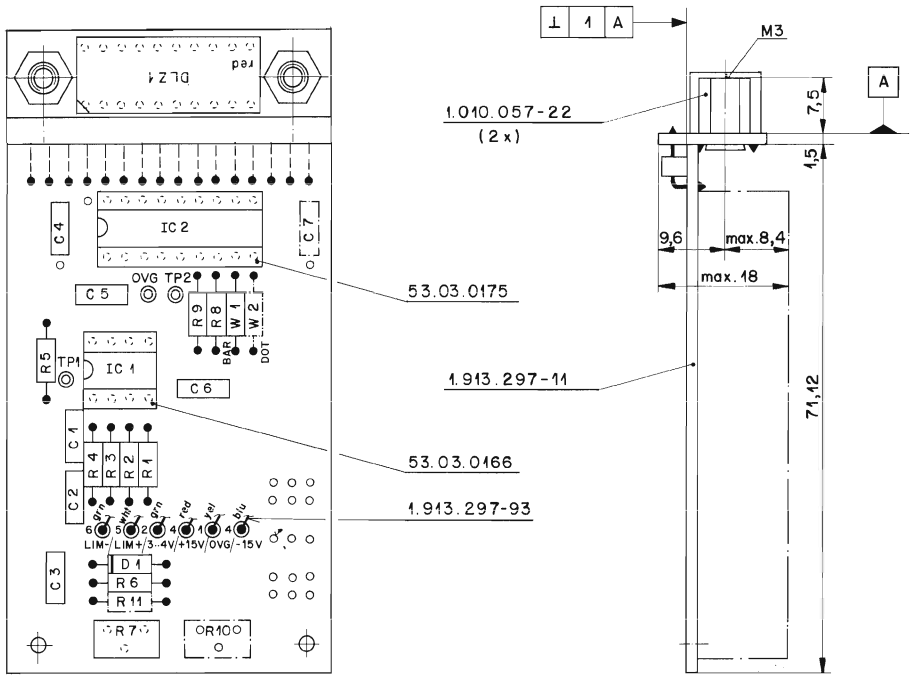



SPECIFICATIONS : UNIT WILL SUPPLYED BY VU/PPM METER 1.913.295.00 / 24V...30V
CURRENT WILL INCREASE BY ⟶ IDLE : 10mA / LOAD : 25mA

| 13.11.89 | | | | |
|---|---|---|---|---|
| STUDER REGENSDORF ZURICH | GRM METER 10 LED | | | SC 1.913.297.00 |

VU / PPM 30 LED

## Gain Reduction Meter 1.913.297.00




Schilder 1.913.297-04/43.01.0108
aufgeklebt nach Fabrikationsmuster.

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | C....01 | 59.06.5102 | 1 nF | 5% PE | |
| | C....02 | 59.06.5102 | 1 nF | 5% PE | |
| | C....03 | 59.06.5102 | 1 nF | 5% PE | |
| | C....04 | 59.06.0104 | 0.1 uF | PE | |
| | C....05 | 59.06.0104 | 0.1 uF | PE | |
| | C....06 | 59.06.0104 | 0.1 uF | PE | |
| | D....01 | 50.04.1112 | ZPD 5.1 | V .5W 5.1V SI | any |
| | DLZ..01 | 50.04.2150 | 10 LED | DISPLAY RED | HP |
| | IC...01 | 50.09.0101 | TL 072 | dual op. amp. | NS,TI |
| | IC...02 | 50.11.0119 | LM3914 | led bar/dot lin. | NS |
| | MP...01 | 1.913.297.11 | 1 pcs | GRM METER 10 LED PCB | St |
| | MP...02 | 1.010.057.22 | 2 pcs | Hexagon post M3*7.4 | |
| | MP...03 | 53.03.0166 | 1 pcs | 8-pin IC-socket | |
| | MP...04 | 53.03.0175 | 1 pcs | 18-pin IC-socket | |
| | MP...05 | 54.11.0132 | 16 pcs | connection | |
| | MP...06 | 54.02.0471 | 9 pcs | plug ( Rund - Stecketift ) | |
| | MP...07 | 1.913.297.93 | Li-Li | 6 cable connections | St |
| | R....01 | 57.11.3104 | 100 kOhm | 1% 0.25W | |
| | R....02 | 57.11.3104 | 100 kOhm | 1% 0.25W | |
| | R....03 | 57.11.3104 | 100 kOhm | 1% 0.25W | |
| | R....04 | 57.11.3104 | 100 kOhm | 1% 0.25W | |
| (00) | R....05 | 57.11.3473 | 47 kOhm | 0.25W | |
| (01) | R....05 | 57.11.3273 | 27 kOhm | 0.25W | |
| (00) | R....06 | 57.11.3103 | 10 kOhm | 0.25W | |
| (01) | R....06 | 57.11.3562 | 5.6 kOhm | 0.25W | |
| | R....07 | 58.01.9503 | 50 kOhm | 10% 0.50W trim | |
| | R....08 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | |
| | R....09 | 57.11.3682 | 6.8 kOhm | 1% 0.25W | |
| | W....01 | 57.11.3000 | | Wire link BAR, W2 DOT | |



(01)89/11/22 min. 0V...2V Range

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola,
NS=National Semiconductors, Ph=Philips, Ra=Raytheon,
Sig=Signetics, Si=Siemens , St=Studer,
TI=Texas Instrument

ORIG 88/10/31 (01) 89/11/22

# Bargraph Display

## Contents

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1. Technical Description ..... 1

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4. Block Diagram ..... 10

5. Schematics ..... 11

REFERENCE

This manual refers to the following units:

| | |
|---|---|
| Dual Bar Graph PPM | 1.913.111 |
| Dual Bar Graph VU | 1.913.112 |
| 8 Channel Bar Graph PPM | 1.913.411 |
| 8 Channel Bar Graph VU | 1.913.412 |

# 1. Technical Description

The output meter, whatever it may be called, is one of the most important tools in audio engineering. Wherever audio signals are being processed, it is an essential, because the output level is an important criterion. On the one hand, maximum output level is needed for achieving the best signal-to-noise ratio, on the other hand the reference level should not be exceeded, particularly in digital recordings, otherwise distortion will increase dramatically.

Two types of output meters with different dynamic characteristics have proven themselves useful in recording studios:

**Volume Unit Meter (VU)**

The most frequently used instrument for measuring audio frequency signal levels is the VU-meter. In the ANSI standard (American National Standards Institute, Inc.), the mechanical and electrical behavior of the VU-meter was already defined in 1954. The rule is that the indication shall be 99% of the ultimate value (0 VU) when a signal of 0.3 s (300 ms) duration is applied. The overshooting of the indication shall be between 1...1.5%. The rise and decay time are identical in the VU-meter.

In the conventional version a VU-meter consists of a suitable moving coil instrument and a full-wave rectifier connected to the input.

**Peak Program Meter (PPM)**

The PPM is a more recent instrument. Its behavior is defined in the applicable DIN or IEC standards. The principal difference to the VU-meter is in the integration time: the PPM is a quasi peak value instrument with a long release time. A peak value will be indicated even for very short peaks in a music program.

If a sine wave voltage is applied for 10 ms that yields a level of 0dB, the indication should be -1dB. A release time of 1.7 s is desired for levels down to -20dB (IEC).

**Instrument Types**

An advanced alternative to electromechanical analog displays are the gas discharge bargraph displays. Neon gas that is induced to glow between two glass plates emits visible light. The plasma display has some decisive advantages over all the other displays. For example: large reading angle and high contrast combined with low power consumption and long life. Its disadvantages are: high anode voltage (250 V), high price, and sophisticated electronic circuitry. Despite these drawbacks this excellent type of display has become the de-facto standard in professional studio applications.

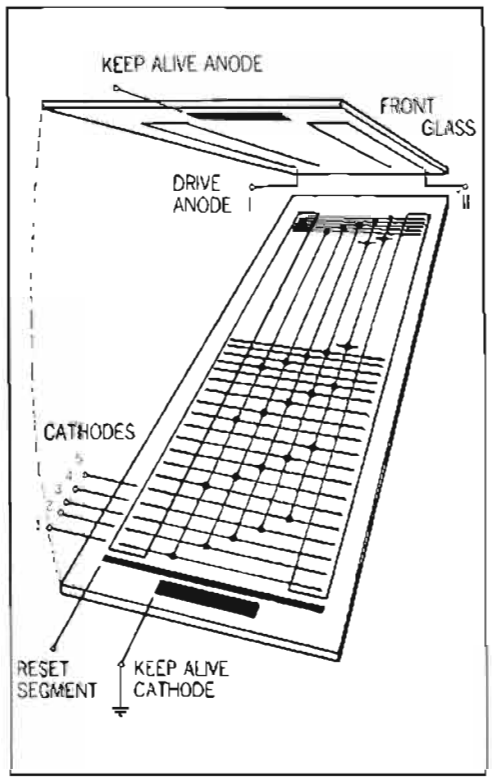
**Implementation of the Studer Bargraph Output Meters**

The design specifications for a precision metering instrument that would not be too costly but still have a modular design resulted in the following arrangement; two individual circuit boards, one for the two-channel signal processing paths and one for the digital section with the switching power supply. In this way it became feasible to achieve a modular design: four signal modules for eight channels but only one digital module.

The operating principle of the individual elements that make up the bargraph display is depicted in the following picture:

**Plasma Tube**

After the 250 VDC supply voltage has been applied, a continuous glow discharge is triggered between the pre-ionization anode and cathode. Since the area around the pre-ionization segment is not physically isolated from the neighboring segments, the charge carriers diffuse into the area of the reset cathode. When the latter is energized first, a glow discharge occurs also here. The same effect causes the first segment to light up (ignite), if the reset cathode is switched off while cathode 1 is switched on. Although each 5th segment is electrically interconnected, only the lowest one glows because sufficient charge carriers are located in its vicinity.
The cathodes 1-2-3-4-5 / 1-2-3-4...etc. are now controlled in this order. The glow discharge migrates segment by segment to the last segment. A new cycle is then initiated by means of the reset segment.




Plasma tube

The length of the bargraph is controlled by the power-on duration of the corresponding anode while the cathodes are controlled cyclically in the dark segment. This design requires only 8 connections or driver stages (2 anodes, 1 reset cathode and 5 write cathodes) for controlling the 2 x 200 segments. In order to create a flicker-free bargraph the refresh rate must be at least 70 Hz. Unnoticeable to the viewer is, however, that only one segment glows at any one moment!

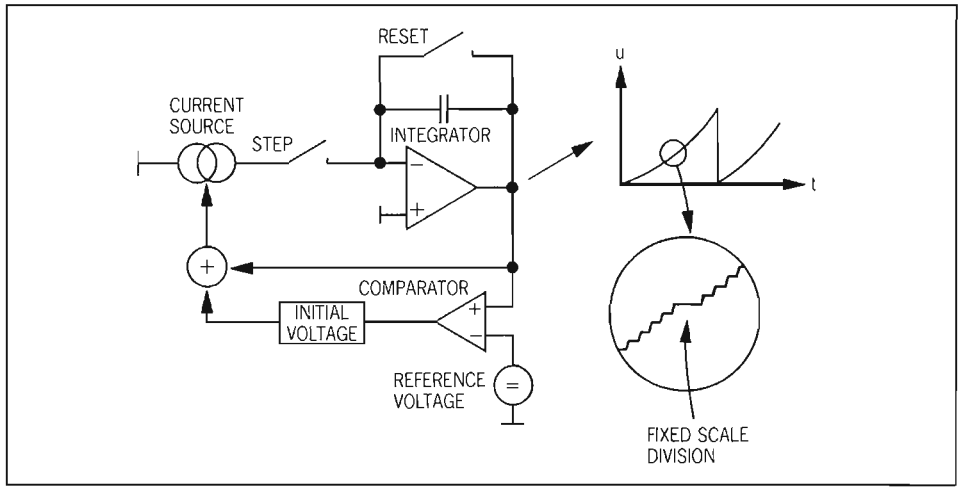
**Analog Electronics**

The audio section is shown in the block diagram (see p.12). The isolated AF signal is taken to the level stage; the large working range permits the connection of almost any level. For very small levels a +20 dB amplifier is provided. The low-pass filter of the 3rd order attenuates frequencies of over 20 kHz. This circuit is followed by a sophisticated rectifier stage that compensates very carefully with respect to the offset voltages.

For the VU representation, the rectified signal is fed to a filter that duplicates the characteristic of mechanical moving coil instruments. For the PPM representation, the peak value of the rectified signal is formed.

**Digital Electronics**

The digital section performs various functions. Not only does it process the signals for the plasma tube, it also is responsible for generating the ramp. A totally new approach has been selected for the ramp generation. Normally the audio signal is converted to logarithmic characteristic in an amplifier in order to achievedB representation. The resulting signal is subsequently compared with a time-linear ramp. However, the same can be accomplished by comparing the linear AF signal with an exponential ramp, without the typical problems of a logarithmic circuit (temperature dependence, offset). In addition, more instruments can be controlled by means of a ramp (in the digital section); no logarithmic circuits are required.




**Ramp generator**

While a capacitor is charged with a constant current, the terminal voltage rises linearly. If this source is equipped with a positive feedback that converts the continually rising voltage to a continually increasing current, we obtain an exponentially progressing terminal voltage.
If the capacitor is discharged after a while, the initial voltage for starting the cycle is missing. A control circuit is available that prepares the initial voltage in such a way that a reference value is achieved after a certain time.
For inserting fixed scale divisions, the capacitor charging is interrupted during three cycle units. As a result the corresponding segment glows three times longer and consequently appears to be brighter.

By disconnecting the above mentioned positive feedback, the linear ramp is again obtained for representing VU values or representable DC values.
The ramp oscillator also supplies the input signal for a binary counter that increments until reset. The outputs of the counter are address lines for an EPROM which generates the 5-phase signal and a reset signal for creating the fixed scale divisions as well as a reset signal for the counter. With the two remaining address lines it is possible to insert different scale divisions.

**Future Application**

The new bargraph instrument also features a LED column for indicating limiter or compressor gain reduction signals. With the externally controllable selection of VU or PPM characteristic it is also possible to display DC voltages on linear or logarithmic scale. The built-in switching power supply supports a large range of DC supply voltages.

For PCM recordings a faster response time (t = 0.1 ms) may be selected by a switch.

## 2. Technical Data

### PEAK PROGRAM METER SPECIFICATION

**Reference Indication** 0 dB = 0 dBu .... + 15 dBu

**Indicating Range** + 5 dB .... - 40 dB

**Error** ± 0.2 dB (± 2 segments) within + 5 dB and - 40 dB

**Frequency Response** ± 0.5 dB between 31.5 Hz and 16 kHz at 0° C .... 50° C

**Dynamic Response** according to IEC publication 268-10 1974:

| SINGLE BURST | FREQUENCY | DEFLECTION SLOW VALUE | TOLERANCE | DEFLECTION FAST |
|---|---|---|---|---|
| 10 ms | 3 kHz | - 1 dB | ± 0.5 dB | -0,3 dB |
| 5 ms | 3 kHz | - 2 dB | ± 1 dB | -0,6 dB |
| 3 ms | 3 kHz | - 4 dB | ± 1 dB | -0,8 dB |
| 0.4 ms | 10 kHz | - 15 dB | ± 3 dB | -1,0 dB |

**Overswing** none

**Return Time** 0 dB .... - 20 dB: 1.7 ± 0.3 seconds

### VU-METER SPECIFICATION

**Reference Indication** 0 VU = - 4 dBu .... + 11 dBu

**Indicating Range** + 3 VU .... - 20 VU, voltage linear

**Frequency Response** + 1.0/- 0.0 dB at 0 VU and 31.5 Hz; Temperature range 0° C .... 50° C

**Response Time** 207 ms (± 30 ms) to - 1 VU of reference indication

**Overswing** 1 ... 1.5 %

**Return Time** 207 ms (± 30 ms).

## DC METER SPECIFICATION

**Display Range**

| INDICATION | NORMAL | | | REVERSE |
|---|---|---|---|---|
| TOP END | 0 V | 0 V | - 1 V | + 1 V |
| BOTTOM | + 10 V | + 6 V | + 6 V | - 10 V |

There is mutual influence between the alignment of 'Top End' and 'Bottom' indication. The values in the row 'Normal' are ment to be examples for possible settings.

## GENERAL SPECIFICATIONS

**Input Impedance** > 10 kOhm

**Source Impedance** < 1 kOhm

**Reversibility Error** < 0.5 dB

**Temperature Range** error ± 0.5 dB in the range - 10° C .... + 60° C
(reference: 1 kHz at 25° C)

**Supply Voltage** 24 V ... 34 V (or ± 15 V)

**Power Consumption** dual unit: 3.5 W typ., 5.0 W max.
8 channels: 9.5 W typ., 14.5 W max.

**Mechanical Dimensions** dual unit: 40 mm(W) x 170 mm(H) x 130 mm(D)
8 channel unit: 160 mm(W) x 170 mm(H) x 130 mm(D)

**Weight** dual unit: 640 g
8 channel unit: 1600 g

## GR METER SPECIFICATION

**Input Range** ± 2 V .... ± 5 V for + 20 dB indication

## 3. Alignments and Settings

**Note:** The Analog Print 1.913.117 contains two channels, so each adjustment pot exists twice. All adjustments have to be performed on all channels.

The Digital Print 1.913.118 exists only once per unit, be it a two or eight channel device.

### 3.1 Adjustments

**Level Setting**

For adaptation to different line levels only the folllowing adjustment is necessary:

- Feed reference level 1 kHz (e.g. +6 dBu)
- adjust 0 dB indication on bargraph with R 5 (R 105) Potentiometer is marked **AUDIO GAIN**

**Complete Adjustment**

In case of part exchange a full adjustment procedure may be necessary. In this case proceed in the following steps:

**AC Input:** Set unit to "PPM", "+20 dB off", and "Not fast" (see below)

- Disconnect input, terminate input with 200 Ohm
- adjust minimal level (0 ±1 mV) at pin 7 of IC 6 (internal potentiometer)

- Feed reference level 1 kHz (e.g. +6 dBu)
- adjust 0 dB indication on bargraph with R 5 (R 105).

Potentiometer is marked **AUDIO GAIN**

- Feed 20 dB below reference level 1 kHz (e.g. -14 dBu)
- adjust -20 dB indication with R 64 (potentiometer on digital print; do not readjust after the first channel has been properly adjusted)

- Feed 30 dB below reference level 1 kHz (e.g. -24 dBu)
- adjust -30 dB indication with R 30 (R 130). Potentiometer is marked **AUDIO OFFSET**

- Repeat all steps until all indications are correct.

**DC Iput:** Set unit to "DC" and adjust the wanted input phase configuration (see below).

- Feed maximum DC voltage.
- Adjust maximum indication with R 55 (R 155). Potentiometer is marked **DC GAIN**

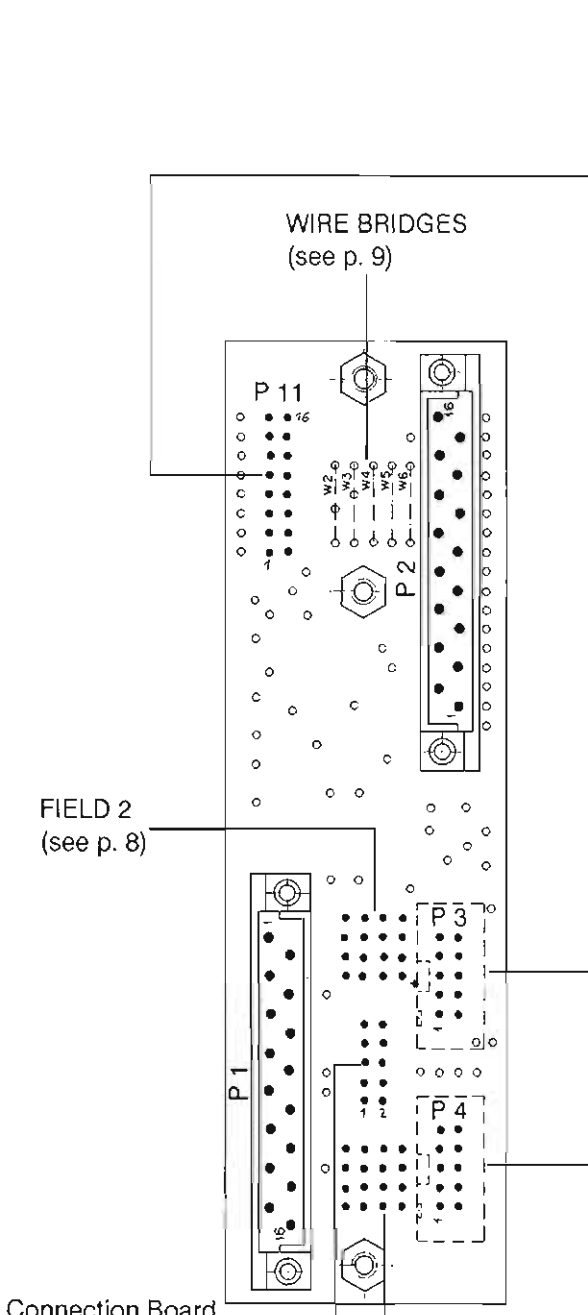
- Feed minimum DC voltage
- Adjust minimum indication with R 63 (R 163). Potentiometer is marked **DC REF**

- Repeat all steps until all indications are correct.

**GRM Input:**

- Feed level 1 kHz required for a indication of +20 dB on the gain reduction meter.
- Adjust indication with R 60 (R 160). Potentiometer is marked **GRM**

## 3.2 Connections




FLAT CABLE 4 plug P11 (option)
(control signals)

| | |
|---|---|
| 1,2 | 0 Volt; DC ground |
| 3,4 | Switch "+20 dB" |
| 5,6 | Switch "FAST" |
| 7,8 | Switch "DOT" |
| 9,10 | |
| 11,12 | Switch "LIN" |
| 13,14 | Switch "AC/DC" |
| 15,16 | Switch "USER" |

FLAT CABLE 2 plug P3
(right instrument)

| | |
|---|---|
| 1 | GRM 2 a |
| 2 | + DC supply |
| 3 | GRM 2 b |
| 4 | 0 Volt analog* |
| 5 | INPUT R a |
| 6 | - DC supply |
| 7 | INPUT R b |
| 8 | 0 Volt logic* |
| 9 | |
| 10 | -6 Volt* |

FLAT CABLE 1 plug P4
(left instrument)

| | |
|---|---|
| 1 | GRM 1 a |
| 2 | + DC supply |
| 3 | GRM 1 b |
| 4 | 0 Volt analog* |
| 5 | INPUT L a |
| 6 | - DC supply |
| 7 | INPUT L b |
| 8 | 0 Volt logic* |
| 9 | |
| 10 | -6 Volt* |

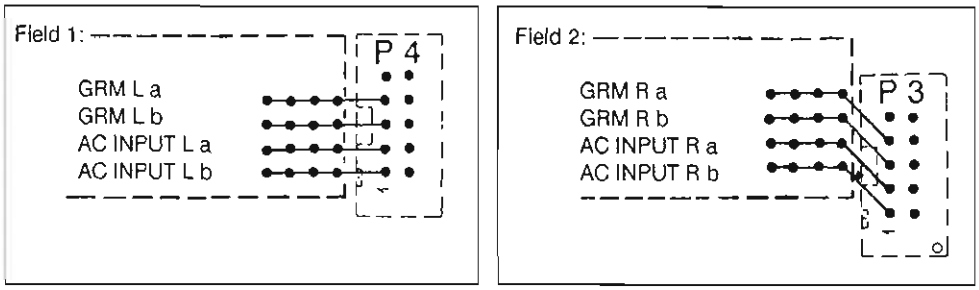
FLAT CABLE 3 plug P9 (option)
(DC input)

| | |
|---|---|
| 1 | DC input R |
| 2 | |
| 3 | DC input L |
| 4 | |
| 5 | DC phase switch (see below) |
| 6 | |
| 7 | DC ground |
| 8 | |

If the unit is powered by an unstabilized DC supply, an additional C may be installed (1000 $\mu$F, 40 Volt, Order No. 59.22.6102).

Signals marked with an asterisk (*) are not required for the bargraph.

The lines carrying the AC bargraph input and the GRM input signals may also be soldered to the unit (instead of feeding those signals via the flat cables; especially useful for operation outside STUDER mixers). The connection points are:




**DC Supply**

DC can be fed either via flat cable 1 or 2 or directly to the pins marked "+" and "-".

## 3.3 Function Settings

Some functions can be set both by wire bridges and by external switches. Do not duplicate!

### Wire Bridges

| BRIDGE | ON | OFF | |
|---|---|---|---|
| W2 | ■ | | INSTRUMENT ATTACK TIME 0.1 ms |
| | | ■ | STANDARD ATTACK TIME (10 ms in PPM mode) |
| W3 | ■ | | GRM INDICATION AS SINGLE DOT |
| | | ■ | GRM INDICATION AS BAR |
| W4 | | | (reserved for future use) |
| W5 | | ■ | PPM INDICATION |
| W6 | | ■ | |
| W5 | ■ | | VU INDICATION |
| W6 | | ■ | |
| W5 | | ■ | DC LOG INDICATION |
| W6 | ■ | | |
| W5 | ■ | | DC LIN INDICATION |
| W6 | ■ | | |

### External Switches

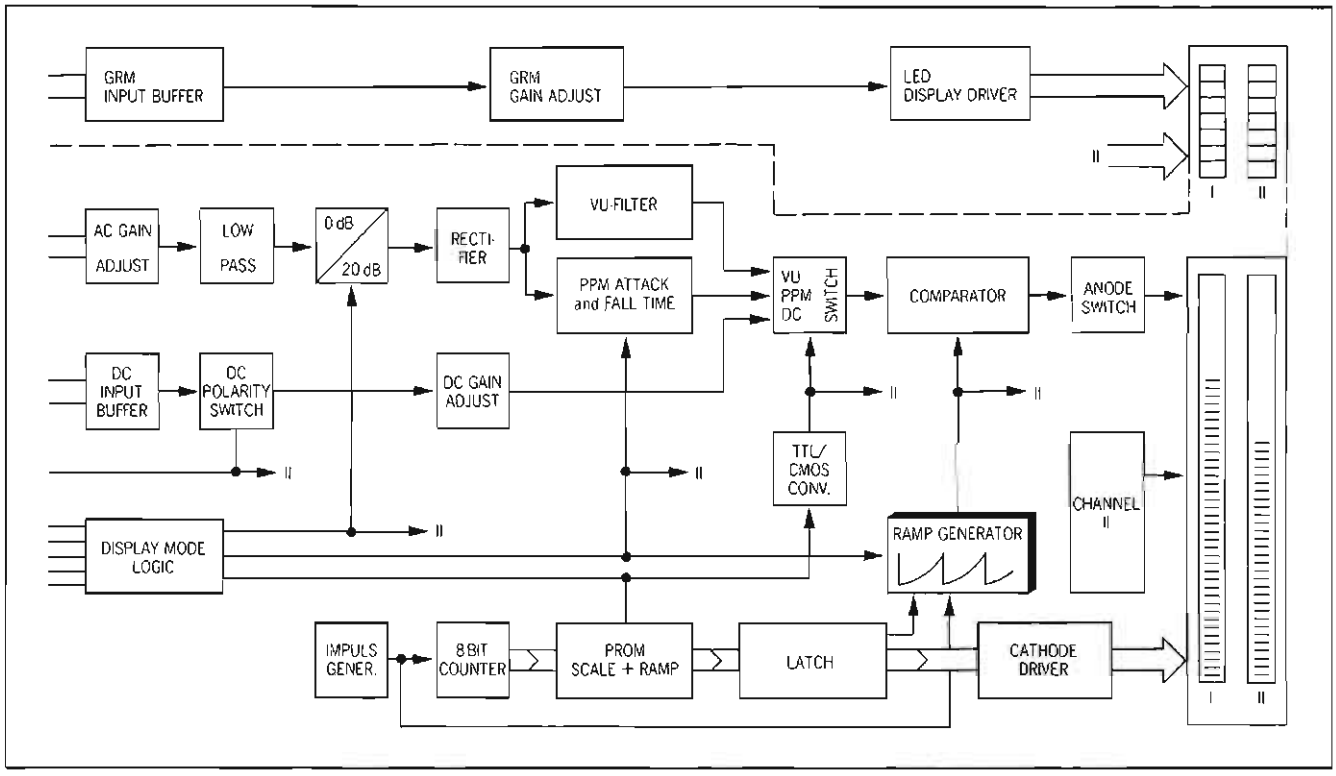
"ON" means that either the pin is connected to ground (pin 1/2) or that a TTL low level is connected. "OFF" means that either the switch is open (internal pull-up resistor) or that a TTL high level is connected.

All external switches are connected via flat cable 4 (see above).

| PIN | ON | OFF | |
|---|---|---|---|
| 1,2 | | | 0 VOLT |
| 3,4 | ■ | | AC GAIN +20 dB |
| | | ■ | AC GAIN 0 dB |
| 5,6 | ■ | | INSTRUMENT ATTACK TIME 0.1 ms |
| | | ■ | STANDARD ATTACK TIME (10 ms in PPM mode) |
| 7,8 | ■ | | GRM INDICATION AS SINGLE DOT |
| | | ■ | GRM INDICATION AS BAR |
| 11,12 | ■ | | LIN INDICATION (if DC selected), VU INDICATION (if AC selected, see 13/14) |
| | | ■ | LOG INDICATION (if DC selected), PPM INDICATION (if AC selected, see 13/14) |
| 13,14 | ■ | | DC |
| | | ■ | AC |
| 15,16 | ■ | | USER SWITCH: LED ON FRONT PLATE ON |
| | | ■ | LED ON FRONT PLATE OFF |

## 4. Block Diagram

Block Diagram for Channel I



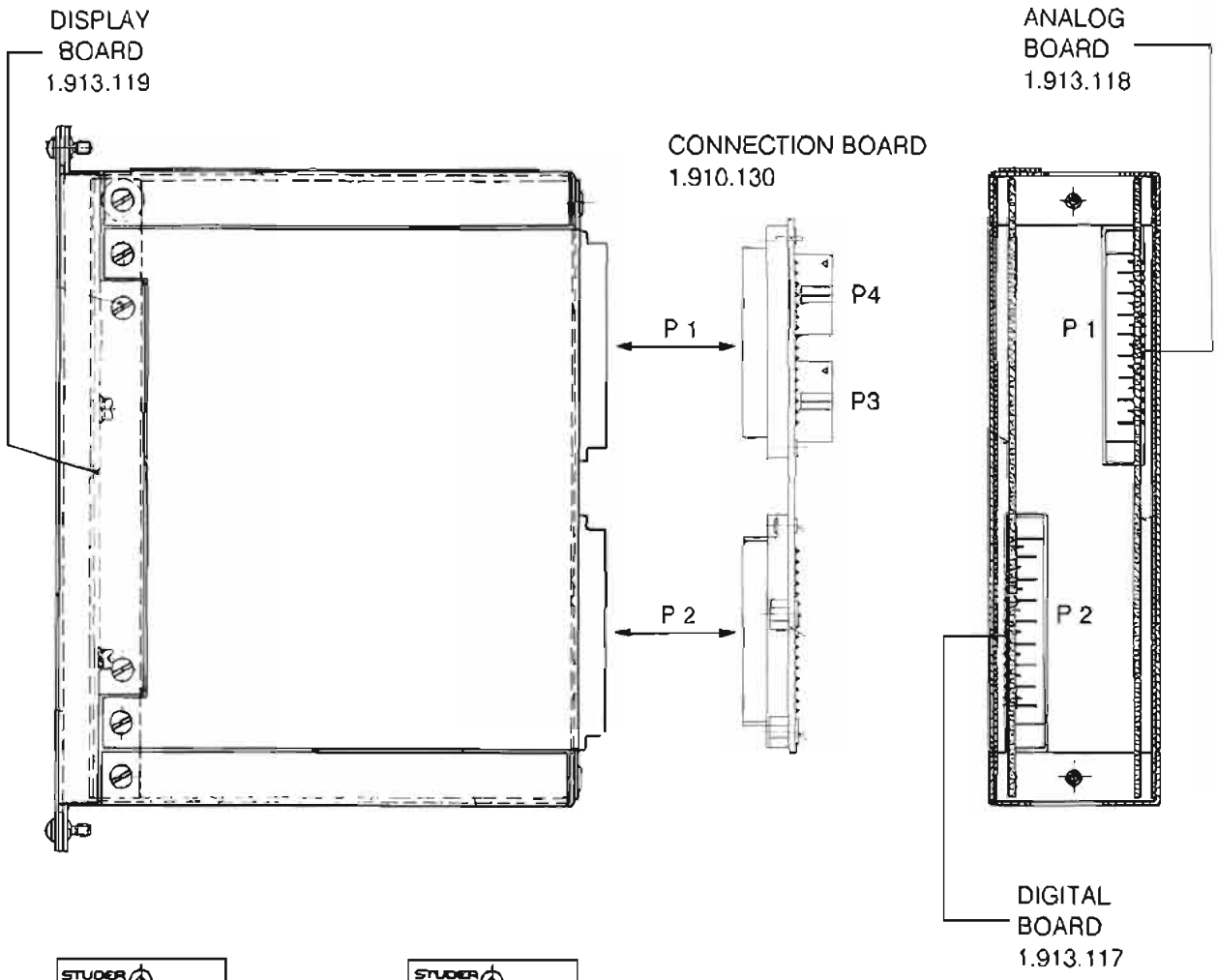
## 5. SCHEMATICS

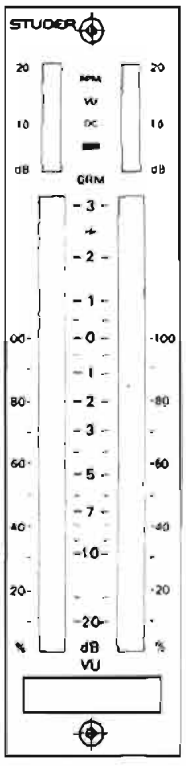
1. **Bar Graph 1 Unit** (VU or PPM)
   - General ..... 1.913.111 / 112
   - Display Board ..... 1.913.119
   - Connection Board ..... 1.910.130

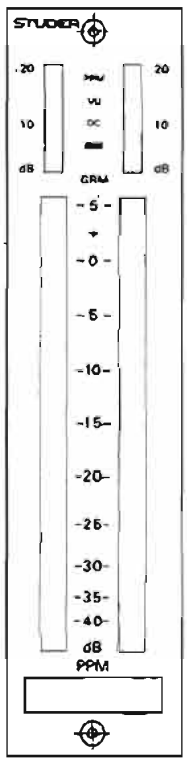
2. **Bar Graph 4 Units** (VU or PPM)
   - General ..... 1.913.411 / 412
   - Display Board ..... 1.913.419
   - Connection Board ..... 1.910.131

3. **Dual Bargraph circuit diagram** ..... 1.913.111/112
   - Digital Board (1 Unit and 4 Units) ..... 1.913.117
   - Analog Board (1 Unit and 4 Units) ..... 1.913.118

Bargraph 1 Unit (PPM or VU) 1.913.111.81 / 112.81

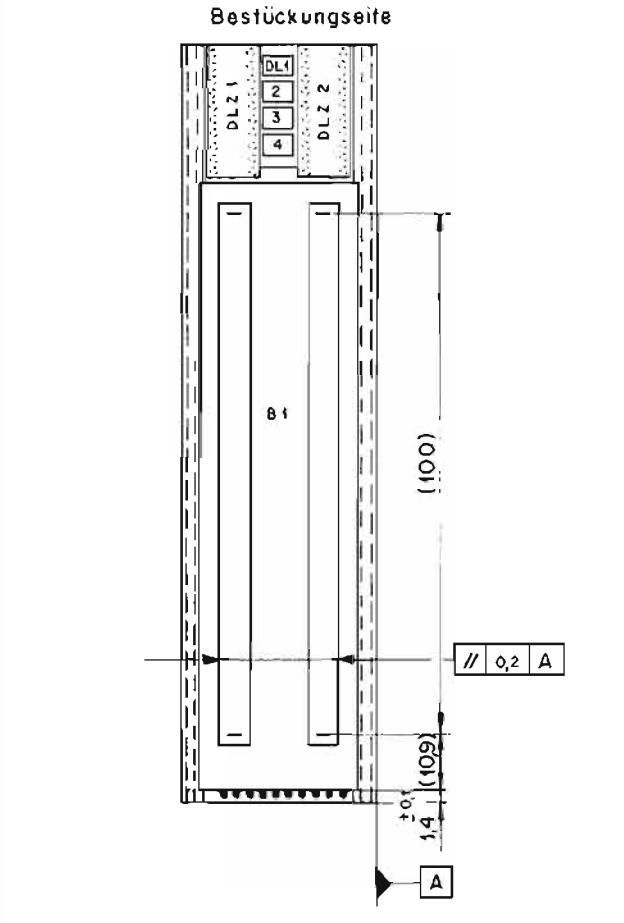


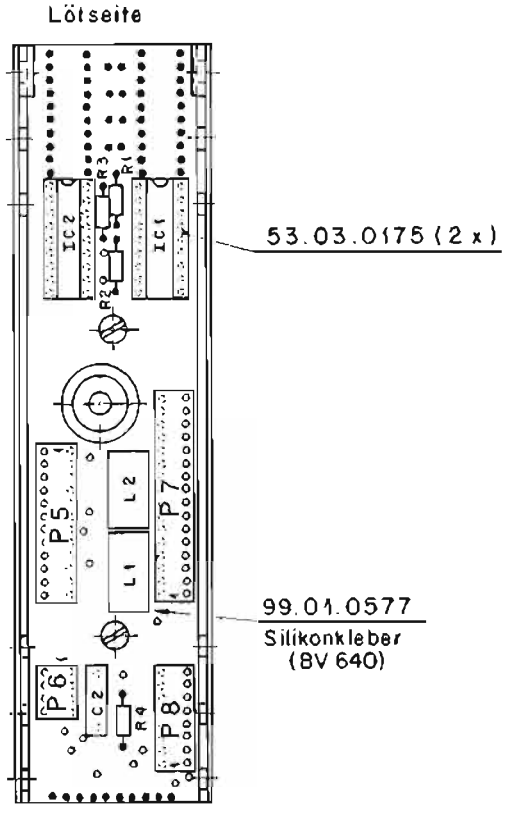



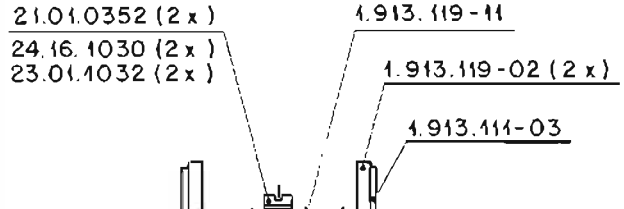



BARGRAPH

## Display Board 1 Unit 1.913.119.00




| MD. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | B.....1 | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | |
| | C.....1 | | not used | | |
| | C.....2 | 59.31.8393 | 33 nF | +-5% 400V MPC | |
| | C.....3 | | not used | | |
| | DL....1 | 50.04.2119 | MV57124 | red | |
| | DL....2 | 50.04.2119 | MV57124 | red | |
| | DL....3 | 50.04.2119 | MV57124 | red | |
| | DL....4 | 50.04.2119 | MV57124 | red | |
| | DLZ...1 | 50.04.2150 | | led bar-graph red | |
| | DLZ...2 | 50.04.2150 | | led bar-graph red | |
| | IC....1 | 50.11.0119 | LM3914X | led bar driver linear | NS |
| | IC....2 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | L.....1 | 62.03.0003 | 250uH | coil | |
| | L.....2 | 62.03.0003 | 250uH | coil | |
| | MP....1 | 53.03.0175 | 7 pcs | IC-socket 18 pin | |
| | MP....2 | 1.913.119.11 | 1 pcs | Print | |
| | MP....3 | 1.913.111.03 | 1 pcs | Chassis LE | 0 |
| | MP....4 | 1.913.111.07 | 1 pcs | Isolation LE | |
| | MP....5 | 21.01.0352 | 2 pcs | Zylinderschraube M3x4 | |
| | MP....6 | 24.16.1030 | 2 pcs | Sehnorr M3 | |
| | MP....7 | 23.01.1032 | 2 pcs | Unterlagescheiben M3 | |
| | P.....5 | 54.01.0715 | | Cie Stecker 12 Pol | |
| | P.....6 | 54.01.0241 | | Cie Stecker 4 Pol | |
| | P.....7 | 54.01.0794 | | Cie Stecker 16 Pol | |
| | P.....8 | 54.01.0789 | | Cie Stecker 8 Pol | |
| | R.....1 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....2 | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| | R.....3 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....4 | 57.11.3105 | 1 MOhm | 5% 0.25W | |

STUDER (00) 87/11/24 AE DISPLAY UNIT LE PL 1.913.119.00 PAGE 1

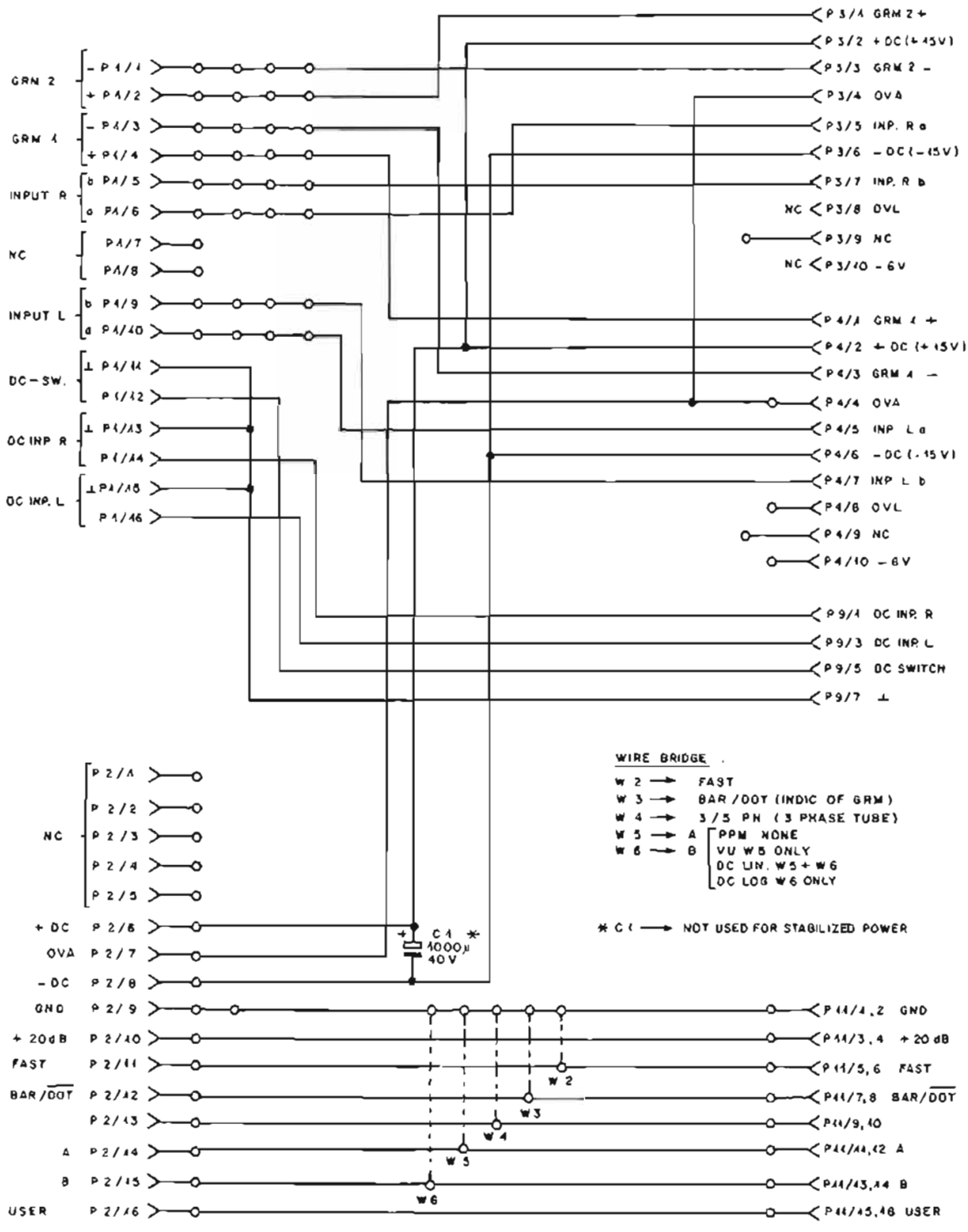
| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|

MANUFACTURER: Bu=Burndy, Ex=Exar, Fa=Fairchild, Gi=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National
(Nakaushitai, NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Sil=Siliconix, St=Studer,
TI=Texas Instrument, Sie=Siemens, In=Intersil, Un=Unitrode

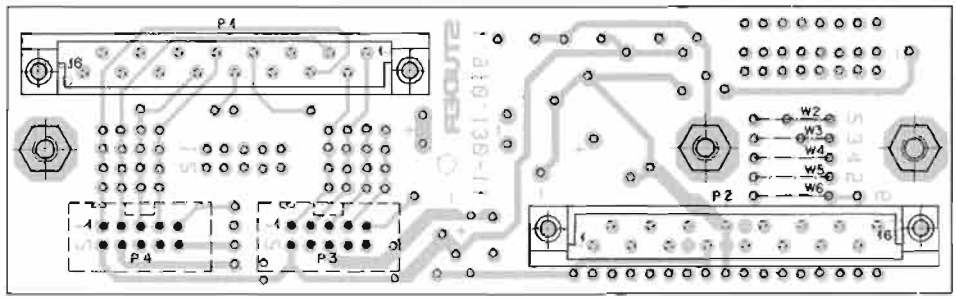
ORIG 87/11/24

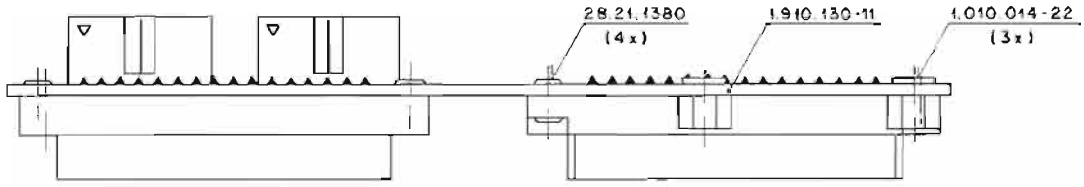
STUDER (00) 87/11/24 AE DISPLAY UNIT LE PL 1.913.119.00 PAGE 2

## Bargraph Connection Board 1 Unit 1.913.130.00



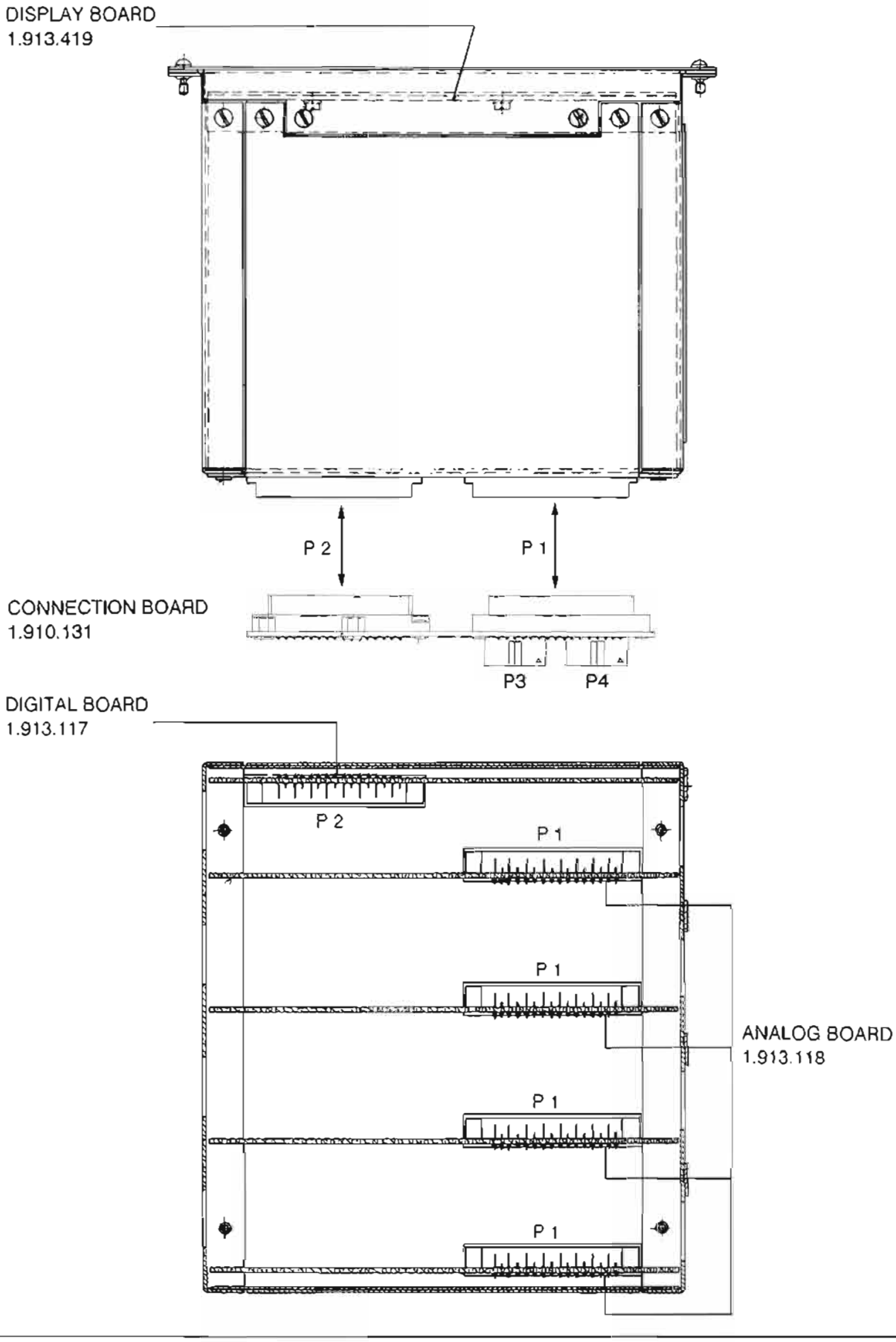
## Bargraph Connection Board 1 Unit 1.913.130.00




W2 bis W6 nach Angabe Studio-Projektierung

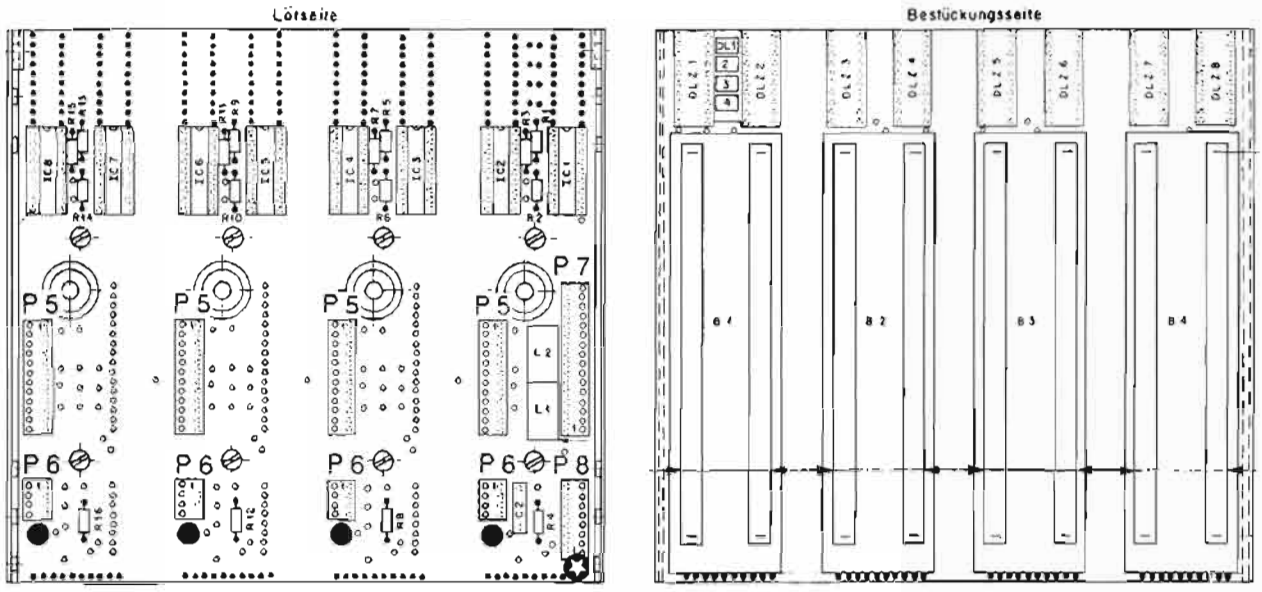
Bargraph 4 Units (PPM or VU) 1.913.411.81 / 412.81



BARGRAPH

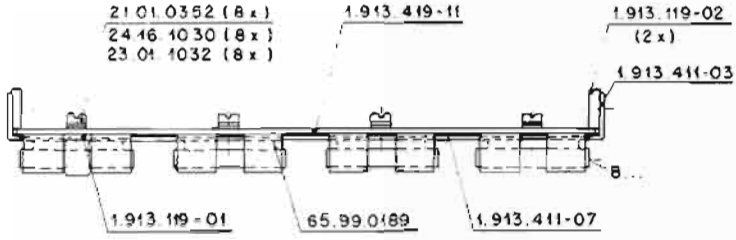
## Display Board 4 Units 1.913.419.00

The Display Board 4 Units is adequate to four display boards for one unit each.
For details see schematic number 1.913.119.




● ANALOG BOARD
1.913.118

✪ DIGITAL BOARD
1.913.117




### Bargraph Connection Board 4 Units 1.910.131

This Board combines four connection boards for one unit on a single print.
For details please see 'Connection Board 1 Unit 1.910.130'.

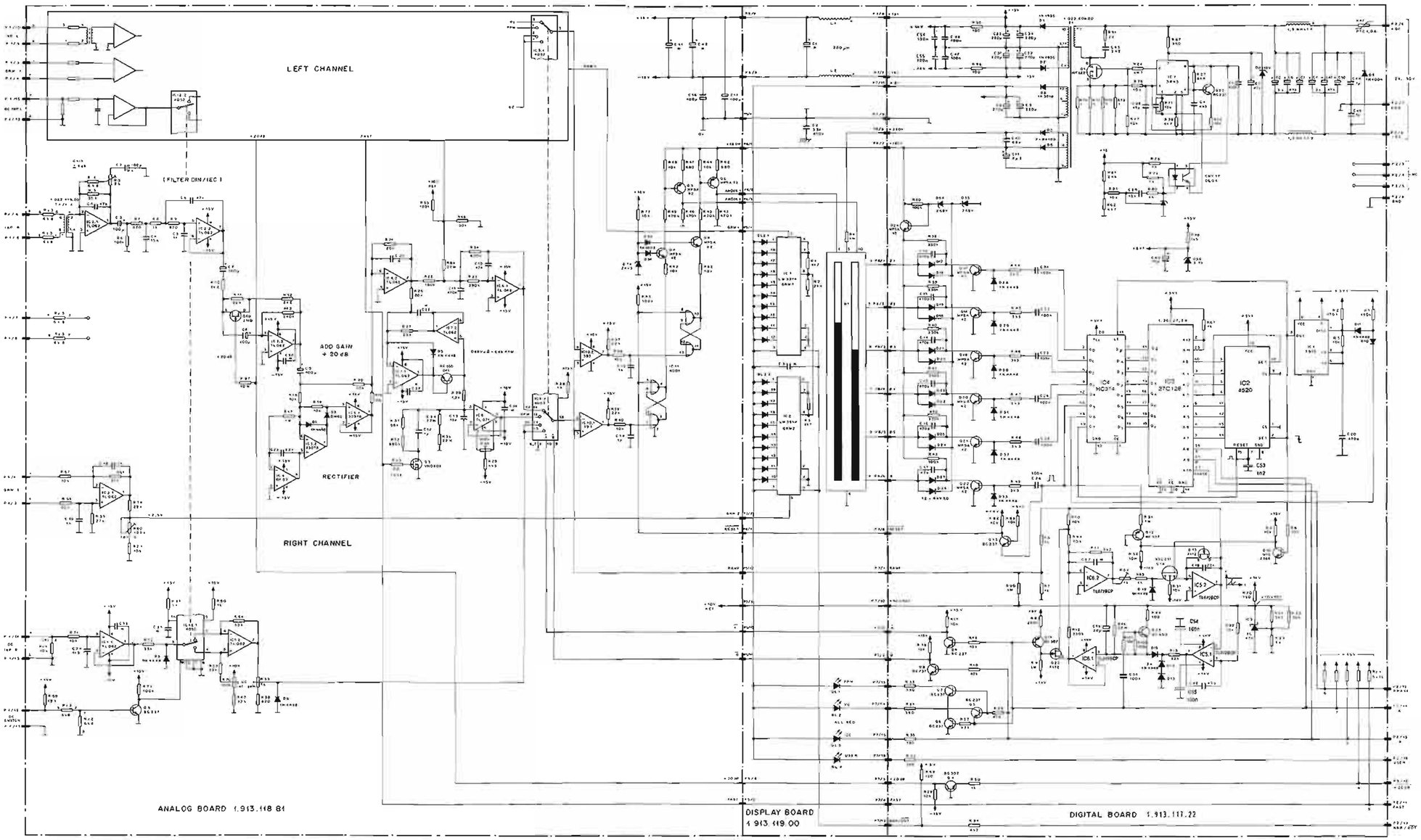
| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | B.....1 | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | |
| | B.....2 | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | |
| | B.....3 | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | |
| | B.....4 | 89.01.4800 | | PLASMA-BAR-GRAPH 200 BARS, 5 PHASES | |
| | C.....1 | | not used | | |
| | C.....2 | 59.31.8332 | 33 nF | +-5% 400V MPC | |
| | C.....3 | | not used | | |
| | DL....1 | 50.04.2119 | HV57124 | red | |
| | DL....2 | 50.04.2119 | HV57124 | red | |
| | DL....3 | 50.04.2119 | HV57124 | red | |
| | DL....4 | 50.04.2119 | HV57124 | red | |
| | DL2...1 | 50.04.2150 | | led bar-graph red | |
| | DL2...2 | 50.04.2150 | | led bar-graph red | |
| | DL2...3 | 50.04.2150 | | led bar-graph red | |
| | DL2...4 | 50.04.2150 | | led bar-graph red | |
| | DL2...5 | 50.04.2150 | | led bar-graph red | |
| | DL2...6 | 50.04.2150 | | led bar-graph red | |
| | DL2...7 | 50.04.2150 | | led bar-graph red | |
| | DL2...8 | 50.04.2150 | | led bar-graph red | |
| | IC....1 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | IC....2 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | IC....3 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | IC....4 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | IC....5 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | IC....6 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | IC....7 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | IC....8 | 50.11.0119 | LM3914N | led bar driver linear | NS |
| | L. ...1 | 62.03.0005 | 250uH | coil | |
| | L.....2 | 62.03.0005 | 250uH | coil | |
| | MP . . 1 | 53.03.0175 | 8 pcs | IC-socket 18 pin | |
| | MP . . 2 | 1.913.419.11 | 1 pcs | Print | |

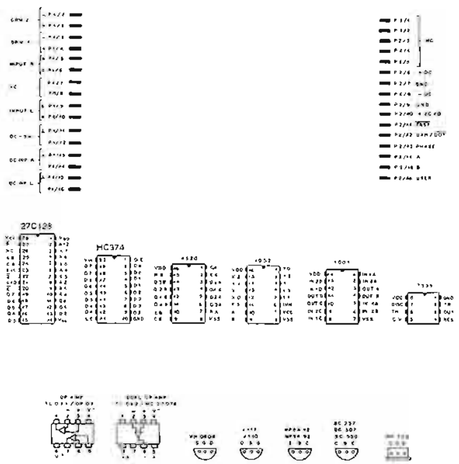
| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF |
|---|---|---|---|---|---|
| | MP....3 | | 1 pcs | Chassis 4E | |
| | MP....4 | | 1 pcs | Isolation 4E | |
| | MP....5 | 21.01.0357 | 2 pcs | Zylinderschrauben M3x4 | |
| | MP....6 | 24.16.1030 | 2 pcs | Schnurr M3 | |
| | MP....7 | 23.01.1032 | 2 pcs | Unterlagsscheiben M3 | |
| | P.....8 | 54.01.0215 | | Cin Stecker 12 Pol | 4 Stueck |
| | P.....6 | 54.01.0241 | | Cin Stecker 6 Pol | 4 Stueck |
| | P.... 7 | 54.01.0294 | | Cin Stecker 16 Pol | 1 Stueck |
| | P.... 5 | 54.01.0289 | | Cin Stecker 8 Pol | 1 Stueck |
| | R.....1 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....2 | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| | R.....3 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....4 | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| | R.....5 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....6 | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| | R.....7 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....8 | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| | R.....9 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....10 | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| | R.....11 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....12 | 57.11.3105 | 1 MOhm | 5% 0.25W | |
| | R.....13 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....14 | 57.11.3242 | 2.4 kOhm | 5% 0.25W | |
| | R.....15 | 57.11.3472 | 4.7 kOhm | 5% 0.25W | |
| | R.....16 | 57.11.3105 | 1 MOhm | 5% 0.25W | |

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National
(Matsushita), NS=National Semiconductor, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, Stu=Studer,
TI=Texas Instrument, Sie=Siemens, Fa=Intersil, Us=Unitrode

ORIG 87/11/24

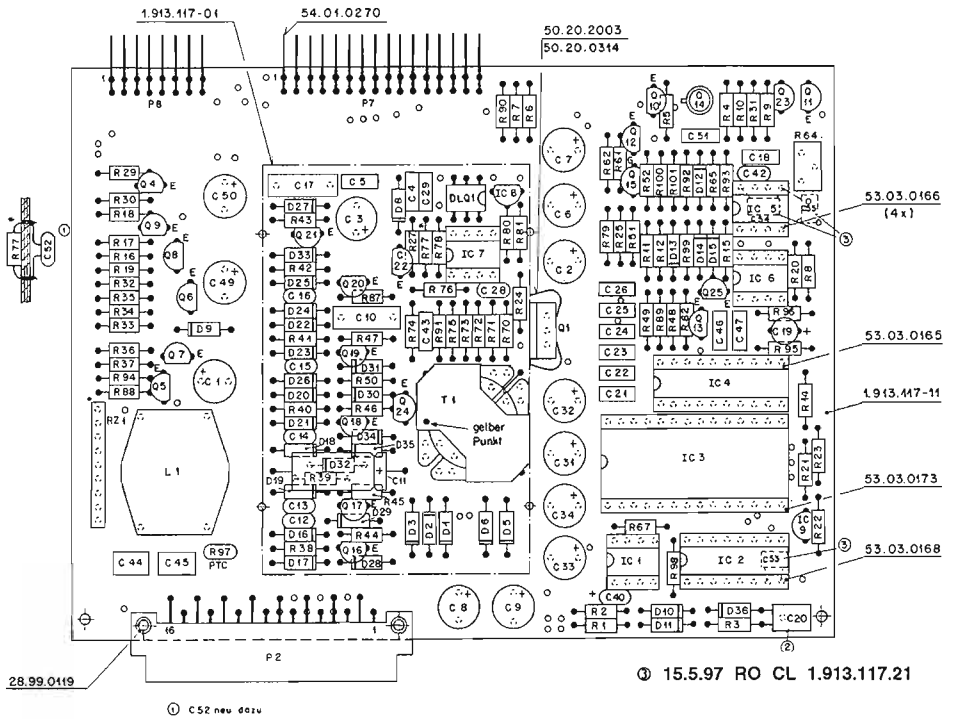
Dual Bargraph 1.913.111.81 / 112.81 BARGRAPH




| | | |
|---|---|---|
| | DUAL BAR GRAPH PPM<br>DUAL BAR GRAPH VU | SC 1.913.111.81<br>SC 1.913.112.81 |

## Bargraph Digital Board 1.913.117.21




① 15.5.97 RO CL 1.913.117.21

① C52 neu dazu

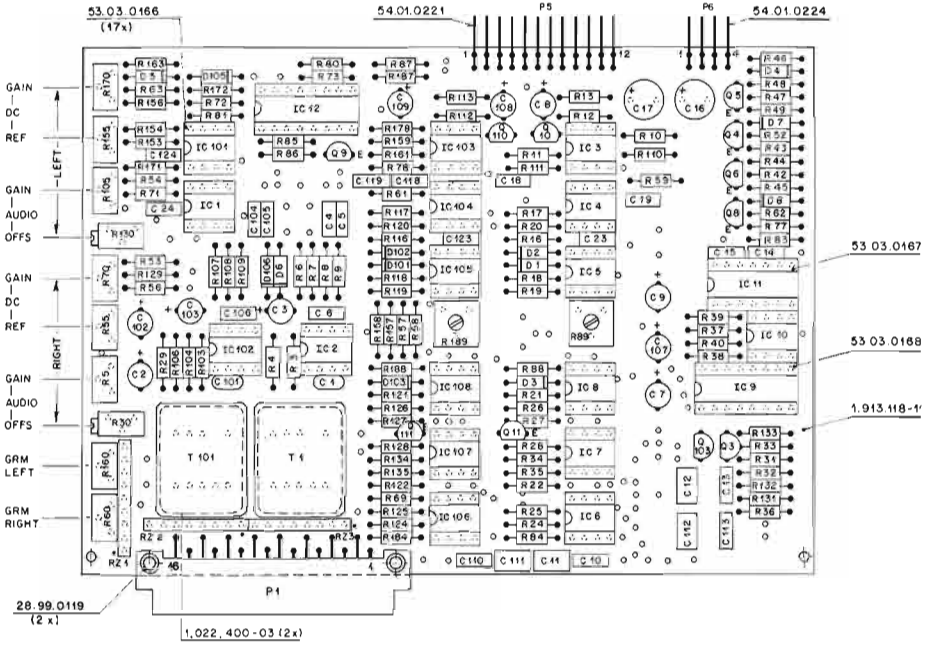
| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.22.6470 | | 47u | EL 40V 20% RM5 |
| 0 | C 2 | 59.22.6470 | | 47u | EL 40V 20% RM5 |
| 0 | C 3 | 59.22.6470 | | 47u | EL 40V 20% RM5 |
| 0 | C 4 | 59.06.0472 | | 4n7 | PETP, 63V, 10%, RM5 |
| 0 | C 5 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 6 | 59.22.6470 | | 47u | EL 40V 20% RM5 |
| 0 | C 7 | 59.22.6470 | | 47u | EL 40V 20% RM5 |
| 0 | C 8 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | C 9 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | C 10 | 59.31.6683 | | 68n | MPETP, 10%, 100V |
| 0 | C 11 | 59.25.8229 | | 2u2 | EL 250V 20% axial |
| 0 | C 12 | 59.32.1471 | | 470p | CER 10%, 400V |
| 0 | C 13 | 59.32.1471 | | 470p | CER 10%, 400V |
| 0 | C 14 | 59.32.1471 | | 470p | CER 10%, 400V |
| 0 | C 15 | 59.32.1471 | | 470p | CER 10%, 400V |
| 0 | C 16 | 59.32.1471 | | 470p | CER 10%, 400V |
| 0 | C 17 | 59.02.5473 | | 47n | MPC, 5%, 250V |
| 0 | C 18 | 59.06.5223 | | 22n | PETP, 63V, 5%, RM5 |
| 0 | C 19 | 59.22.6220 | | 22u | EL 35V 20% RM5 |
| 0 | C 20 | 59.34.5471 | | 470p | CER 63V, 5%, N1500 |
| 0 | C 21 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 22 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 23 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 24 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 25 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 26 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 28 | 59.34.2470 | | 47p | CER 63V, 5%, N150 |
| 0 | C 29 | 59.06.5223 | | 22n | PETP, 63V, 5%, RM5 |
| 0 | C 31 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | C 32 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | C 33 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | C 34 | 59.22.4221 | | 220u | EL 16V 20% RM5 |
| 0 | C 40 | 59.26.1100 | | 10u | SAL 10V 20% |
| 0 | C 42 | 59.34.2470 | | 47p | CER 63V, 5%, N150 |
| 0 | C 43 | 59.06.5222 | | 2n2 | PETP, 63V, 5%, RM5 |
| 0 | C 44 | 59.08.0105 | | 1u0 | PETP, 50V, 10%, RM5 |
| 0 | C 45 | 59.08.0105 | | 1u0 | PETP, 50V, 10%, RM5 |
| 0 | C 46 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 47 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 49 | 59.22.6470 | | 47u | EL 40V 20% RM5 |
| 0 | C 50 | 59.22.6470 | | 47u | EL 40V 20% RM5 |
| 0 | C 51 | 59.06.5104 | | 100n | PETP, 63V, 5%, RM5 |
| 0 | C 52 | 59.32.4102 | | 1n0 | CER , 20%, 50V |
| 0 | C 53 | not used | | 1n2 | CER 10%, 50V |
| 0 | C 54 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 55 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | D 1 | 50.04.0508 | | 1N4935 | D 1 N 4935 ... 1 N 4937 |
| 0 | D 2 | 50.04.0508 | | 1N4935 | D 1 N 4935 ... 1 N 4937 |
| 0 | D 3 | 50.04.0512 | | 1N5818 | D 1N 5818, 1N 5819, |
| 0 | D 5 | 50.04.0513 | | BA159 | D BA 159 , SI |
| 0 | D 6 | 50.04.0513 | | BA159 | D BA 159 , SI |
| 0 | D 8 | 50.04.1122 | | 18V | Zener, 5%, 0.5W, DO-35 |
| 0 | D 9 | 50.04.0105 | | 1N4004 | 1A, DO 41 |
| 0 | D 10 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 11 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 12 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 13 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 14 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 15 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 16 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 17 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 18 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 19 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 20 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 21 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 22 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 23 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 24 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 25 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 26 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 27 | 50.04.0133 | | BAV20 | D BAV 20 , SI |
| 0 | D 28 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 29 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 30 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 31 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 32 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 33 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 34 | 50.04.1188 | | 68V | Zener, 5%, 0.5W, DO-35 |
| 0 | D 35 | 50.04.1166 | | 68V | Zener, 5%, 0.5W, DO-35 |
| 0 | D 36 | 50.04.1112 | | 5V1 | Zener, 5%, 0.5W, DO-35 |
| 0 | DLQ 1 | 50.04.3200 | | CNY17-2 | Opto-coupler |
| 0 | IC 1 | 50.07.0036 | | 7555 | IC ICM 7555 IPA ,A |
| 0 | IC 2 | 50.07.0520 | | 4520 | Dual 4bit binary counter |
| 0 | IC 3 | 1.913.999.22 | | | SW BAR-GRAPH DIGITAL BOARD ,A |
| 0 | IC 4 | 50.17.1374 | | 74HC374 | IC ... 74 HC 374 ... ,A |
| 0 | IC 5 | 50.08.0121 | | TL072B | IC TL 072 BCP ,A |
| 0 | IC 6 | 50.08.0121 | | TL072B | IC TL 072 BCP ,A |
| 0 | IC 7 | 50.10.0113 | | 3843 | IC IP 3843 N |
| 0 | IC 8 | 50.10.0108 | | TL431 | Shunt regulator |
| 0 | IC 9 | 50.10.0106 | | TL431 | Shunt regulator |
| 0 | L 1 | 62.03.0100 | | 1.5mH | 2A Toroid Chocke compensated |
| 0 | MP 1 | 1.913.117.12 | 1 pce | | BAR-GRAPH DIGITAL PCB |
| 0 | MP 2 | 1.913.117.04 | 1 pce | | NR.-ETIKETTE 5 * 20 |
| 0 | MP 3 | 43.01.0108 | 1 pce | Label | ESE-WARNSCHILD |
| 0 | MP 4 | 1.101.001.22 | | | TEXT-ETIK. 5*20 HARDWARE -22 |
| 0 | MP 5 | 1.913.117.01 | 1 pce | | ABSCHIRMHAUBE |
| 0 | MP 6 | 28.99.0119 | 2 pcs | | ROHRNIETE D 2.5*0.15* 9 |
| 0 | MP 7 | 50.20.0314 | 1 pce | TO126 | Glimmerscheibe, zu Clip |
| 0 | MP 8 | 50.20.2003 | 1 pce | | Montageclip zu TO 220, NISOL. |
| 0 | MP 9 | 53.03.0165 | 1 pce | 20p | DIL-socket 0.3" |
| 0 | MP 10 | 53.03.0166 | 4 pcs | 8p | DIL-socket 0.3" |
| 0 | MP 11 | 53.03.0168 | 1 pce | 16p | DIL-socket 0.3" |
| 0 | MP 12 | 53.03.0173 | 1 pce | 28p | DIL 0.6", lot. gerade |
| 0 | P 2 | 54.11.2007 | | 2*8p | EU-BK 2* 8 a1.b2 male |
| 0 | P 7 | 54.01.0270 | 2 pcs | 8p | Stecker CLS parallelstick |
| 0 | P 8 | 54.01.0270 | 1 pce | 8p | Stecker CLS parallelstick |
| 0 | Q 1 | 50.03.1502 | | IRF522 | N-VMOS-FET 100V, 7A |
| 0 | Q 4 | 50.03.0515 | | BC307B | PNP 100mA 45V |
| 0 | Q 5 | 50.03.0436 | | BC237B | NPN 100mA 45V |
| 0 | Q 6 | 50.03.0436 | | BC237B | NPN 100mA 45V |
| 0 | Q 7 | 50.03.0436 | | BC237B | NPN 100mA 45V |
| 0 | Q 8 | 50.03.0436 | | BC237B | NPN 100mA 45V |
| 0 | Q 9 | 50.03.0436 | | BC237B | NPN 100mA 45V |
| 0 | Q 10 | 50.03.0508 | | MPS2369 | MPS 2369 NPN |
| 0 | Q 11 | 50.03.0515 | | BC307B | PNP 100mA 45V |
| 0 | Q 12 | 50.03.0515 | | BC307B | PNP 100mA 45V |
| 0 | Q 13 | 50.03.0436 | | BC237B | NPN 100mA 45V |
| 0 | Q 14 | 50.11.0106 | | SD214 | Analog Swtch |
| 0 | Q 15 | 50.03.0350 | | J112 | JFET N-Channel |
| 0 | Q 16 | 50.03.0484 | | MPSA42 | MPS A 42 |
| 0 | Q 17 | 50.03.0484 | | MPSA42 | MPS A 42 |
| 0 | Q 18 | 50.03.0484 | | MPSA42 | MPS A 42 |
| 0 | Q 19 | 50.03.0484 | | MPSA42 | MPS A 42 |
| 0 | Q 20 | 50.03.0484 | | MPSA42 | MPS A 42 |
| 0 | Q 21 | 50.03.0484 | | MPSA42 | MPS A 42 |
| 0 | Q 22 | 50.03.0436 | | BC237B | NPN 100mA 45V |
| 0 | Q 23 | 50.03.0350 | | J112 | JFET N-Channel |
| 0 | Q 24 | 50.03.0484 | | MPSA42 | MPS A 42 |
| 0 | Q 25 | 50.03.0407 | | BC550C | BC 550 C |
| 0 | R 1 | 57.11.3154 | | 150k | MF, 1%, 0207 |
| 0 | R 2 | 57.11.3474 | | 470k | MF, 1%, 0207 |
| 0 | R 3 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 4 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 5 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 6 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 7 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 8 | 57.11.3224 | | 220k | MF, 1%, 0207 |
| 0 | R 9 | 57.11.3105 | | 1M0 | MF, 1%, 0207 |
| 0 | R 10 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 11 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 12 | 57.11.3334 | | 330k | MF, 1%, 0207 |
| 0 | R 14 | 57.11.6226 | | 22M | MF, 10%, 0207 |
| 0 | R 15 | 57.11.3333 | | 33k | MF, 1%, 0207 |
| 0 | R 16 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 17 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 18 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 19 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 20 | 57.11.3751 | | 750R | MF, 1%, 0207 |
| 0 | R 21 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 22 | 57.11.3383 | | 36k | MF, 1%, 0207 |
| 0 | R 23 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 24 | 57.11.3479 | | 4R7 | MF, 1%, 0207 |
| 0 | R 25 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 27 | 57.11.3682 | | 6k8 | MF, 1%, 0207 |
| 0 | R 29 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 30 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 31 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 32 | 57.11.3391 | | 390R | MF, 1%, 0207 |
| 0 | R 33 | 57.11.3391 | | 390R | MF, 1%, 0207 |
| 0 | R 34 | 57.11.3391 | | 390R | MF, 1%, 0207 |
| 0 | R 35 | 57.11.3391 | | 390R | MF, 1%, 0207 |
| 0 | R 36 | 57.11.3473 | | 47k | MF, 1%, 0207 |
| 0 | R 37 | 57.11.3473 | | 47k | MF, 1%, 0207 |
| 0 | R 38 | 57.11.3334 | | 330k | MF, 1%, 0207 |
| 0 | R 39 | 57.11.3334 | | 330k | MF, 1%, 0207 |
| 0 | R 40 | 57.11.3334 | | 330k | MF, 1%, 0207 |
| 0 | R 41 | 57.11.3334 | | 330k | MF, 1%, 0207 |
| 0 | R 42 | 57.11.3334 | | 330k | MF, 1%, 0207 |
| 0 | R 43 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 44 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 45 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 46 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 47 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 48 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 49 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 50 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 51 | 57.11.3105 | | 1M0 | MF, 1%, 0207 |
| 0 | R 52 | 57.11.5106 | | 10M | MF, 5%, 0207 |
| 0 | R 61 | 57.11.3243 | | 24k | MF, 1%, 0207 |
| 0 | R 62 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 64 | 58.01.8102 | | 1k0 | Cermet, 10%, 0.5W, horizontal |
| 0 | R 65 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 67 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 70 | 57.11.3109 | | 1R0 | MF, 1%, 0207 |
| 0 | R 71 | 57.11.3109 | | 1R0 | MF, 1%, 0207 |
| 0 | R 72 | 57.11.3109 | | 1R0 | MF, 1%, 0207 |
| 0 | R 73 | 57.11.3109 | | 1R0 | MF, 1%, 0207 |
| 0 | R 74 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 75 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 76 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 77 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 78 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 79 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 80 | 57.11.3102 | | 1k0 | MF, 1%, 0207 |
| 0 | R 81 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 82 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 87 | 57.11.3581 | | 560R | MF, 1%, 0207 |
| 0 | R 88 | 57.11.3220 | | 22R | MF, 1%, 0207 |
| 0 | R 89 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 90 | 57.11.3105 | | 1M0 | MF, 1%, 0207 |
| 0 | R 91 | 57.11.3220 | | 22R | MF, 1%, 0207 |
| 0 | R 92 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 93 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | R 94 | 57.11.3471 | | 470R | MF, 1%, 0207 |
| 0 | R 95 | 57.11.3101 | | 100R | MF, 1%, 0207 |
| 0 | R 96 | 57.11.3101 | | 100R | MF, 1%, 0207 |
| 0 | R 97 | 57.92.7003 | | 1.0A | PTC |
| 0 | R 98 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 99 | 57.11.3101 | | 100R | MF, 1%, 0207 |
| 0 | R 100 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 101 | 57.11.3103 | | 10k | MF, 1%, 0207 |
| 0 | RZ 1 | 57.88.4102 | | 1k0 | 8*R Resistor-Netw 2% SIP9 |
| 0 | T 1 | 1.022.608.00 | | | SCHALTTRAFO ZU BAR-GRAPH |

End of List

Comments:

[23] IC3 same SW, but shifted in address-range

## Bargraph Analog Board ESE 1.913.118.81




| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | IC....7 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC....8 | 50.09.0103 | TL 071 | single op. amp. | Ra.NE |
| | IC....9 | 50.07.0024 | 4052 | analog multi-/demultiplexers | |
| | IC....10 | 50.05.0203 | LM 393 P | dual voltage comparator | Ra.NE |
| | IC....11 | 50.07.0006 | 4001 | quad 2-input Nor Gate | |
| | IC....12 | 50.07.0024 | 4052 | analog multi-/demultiplexers | |
| | IC....101 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC..102 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC..103 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC..104 | 50.09.0116 | OP 07 | single op. amp. | Ra. |
| | IC..105 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..106 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC..107 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC..108 | 50.09.0103 | TL 071 | single op. amp. | Ra.NE |
| | Q....3 | 50.03.1505 | VN0808 | V-MosFET | Fa.Six |
| | Q....4 | 50.03.0484 | XP142 | NPN | any |
| | Q....5 | 50.03.0485 | XP2892 | PNP | any |
| | Q....6 | 50.03.0485 | XP2892 | PNP | any |
| | Q....7 | 50.03.0484 | XP142 | NPN | any |
| | Q....8 | 50.03.0484 | XP142 | NPN | any |
| | Q....9 | 50.02.0436 | BC 307 | NPN | any |
| | Q....10 | 50.03.1130 | J 110 | N-JFET | NS.Mot.Six |
| | Q....11 | 50.02.0497 | BC 550 | NPN | any |
| | Q....103 | 50.03.1505 | VN0808 | V-MosFET | Fa.Six |
| | Q....110 | 50.03.1130 | J 110 | N-JFET | NS.Mot.Six |
| | Q....111 | 50.02.0497 | BC 550 | NPN | any |
| | R....3 | 57.11.3333 | 33 kOhm | 5% 0.25W MF | |
| | R....4 | 57.11.3682 | 6.8 kOhm | 5% 0.25W MF | |
| | R....5 | 58.01.9202 | 2 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....6 | 57.11.3104 | 100 kOhm | 5% 0.25W MF | |
| | R....7 | 57.11.3891 | 820 Ohm | 1% 0.25W MF | |
| | R....8 | 57.11.3102 | 1 kOhm | 1% 0.25W MF | |
| | R....9 | 57.11.3821 | 820 Ohm | 1% 0.25W MF | |
| | R....10 | 57.11.3222 | 2.2 kOhm | 1% 0.25W MF | |
| | R....11 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R....12 | 57.11.3222 | 2.2 kOhm | 1% 0.25W MF | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | R....110 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....119 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....120 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....121 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....122 | 57.11.3164 | 160 kOhm | 1% 0.25W MF | |
| | R....124 | 57.11.3624 | 620 kOhm | 1% 0.25W MF | |
| | R....125 | 57.11.3394 | 390 kOhm | 1% 0.25W MF | |
| | R....126 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....127 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....128 | 57.11.3122 | 1.2 kOhm | 1% 0.25W MF | |
| | R....129 | 57.11.3182 | 1.8 kOhm | 1% 0.25W MF | |
| | R....130 | 58.05.0104 | 100 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....131 | 57.11.3563 | 56 kOhm | 5% 0.25W MF | |
| | R....132 | 57.11.3684 | 680 kOhm | 1% 0.25W MF | |
| | R....133 | 57.11.3000 | 0 Ohm | | |
| | R....134 | 57.11.6226 | 22 MOhm | 10% 0.25W MF | |
| | R....135 | 57.11.6226 | 22 MOhm | 10% 0.25W MF | |
| | R....153 | 57.11.3303 | 33 kOhm | 5% 0.25W MF | |
| | R....154 | 57.11.3333 | 33 kOhm | 5% 0.25W MF | |
| | R....155 | 58.01.9102 | 1 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....156 | 57.11.3821 | 820 Ohm | 5% 0.25W MF | |
| | R....157 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....158 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....159 | 57.11.3273 | 27 kOhm | 5% 0.25W MF | |
| | R....160 | 58.01.9104 | 100 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....161 | 57.11.3273 | 27 kOhm | 5% 0.25W MF | |
| | R....163 | 57.11.3303 | 33 kOhm | 5% 0.25W MF | |
| | R....170 | 58.01.9104 | 100 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....171 | 57.11.3103 | 10 kOhm | 5% 0.25W MF | |
| | R....172 | 57.11.3303 | 33 kOhm | 5% 0.25W MF | |
| | R....176 | 57.11.3223 | 22 kOhm | 5% 0.25W MF | |
| | R....184 | 57.11.4226 | 22 MOhm | 5% 0.25W MF | |
| | R....187 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R....188 | 57.11.3106 | 10 MOhm | 5% 0.25W MF | |
| | R....189 | 58.01.9104 | 100 kOhm | 10% 0.5 W PVM trimming resistor | |
| | RZ....1 | 57.08.4103 | 10 kOhm | 5% resistor network | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | R....13 | 57.11.3244 | 240 kOhm | 5% 0.25W MF | |
| | R....16 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....17 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |
| | R....18 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....19 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....20 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....21 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....22 | 57.11.3164 | 160 kOhm | 1% 0.25W MF | |
| | R....24 | 57.11.3624 | 620 kOhm | 1% 0.25W MF | |
| | R....25 | 57.11.3394 | 390 kOhm | 1% 0.25W MF | |
| | R....26 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....27 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R....28 | 57.11.3122 | 1.2 kOhm | 1% 0.25W MF | |
| | R....29 | 57.11.3152 | 1.5 kOhm | 5% 0.25W MF | |
| | R....30 | 58.05.0104 | 100 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....31 | 57.11.3563 | 56 kOhm | 5% 0.25W MF | |
| | R....32 | 57.11.3684 | 680 kOhm | 1% 0.25W MF | |
| | R....33 | 57.11.3000 | 0 Ohm | | |
| | R....34 | 57.11.6226 | 22 MOhm | 10% 0.25W MF | |
| | R....35 | 57.11.6226 | 22 MOhm | 10% 0.25W MF | |
| | R....36 | 57.11.3102 | 1 kOhm | 5% 0.25W MF | |
| | R....37 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R....38 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R....39 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....40 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....42 | 57.11.3681 | 680 Ohm | 1% 0.25W MF | |
| | R....43 | 57.11.3474 | 470 kOhm | 5% 0.25W MF | |
| | R....43 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....45 | 57.11.3474 | 470 kOhm | 5% 0.25W MF | |
| | R....46 | 57.11.3474 | 470 kOhm | 5% 0.25W MF | |
| | R....47 | 57.11.3681 | 680 Ohm | 1% 0.25W MF | |
| | R....48 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....49 | 57.11.3474 | 470 kOhm | 5% 0.25W MF | |
| | R....52 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....53 | 57.11.3333 | 33 kOhm | 5% 0.25W MF | |
| | R....54 | 57.11.3233 | 33 kOhm | 1% 0.25W MF | |
| | R....55 | 58.01.9102 | 1 kOhm | 10% 0.5 W PVM trimming resistor | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | RZ....2 | 57.08.2682 | 6.8 kOhm | 5% resistor network | |
| | RZ....3 | 57.08.2682 | 6.8 kOhm | 5% resistor network | |
| | T....1 | 1.022.419.00 | | input trafo 1:1 | STUDER |
| | T...101 | 1.022.419.00 | | input trafo 1:1 | STUDER |

CER=Ceramic FE=Polyester/ SAL=Solid Aluminium
MF=Metal Film; PRC=Cermet

MANUFACTURER: Fa=Ferranti, EE=Elligon Electronics Corp., Ra=Raytheon,
Sie=Siemens, Six=Sixtronix

ORIG 08/11/11



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | C....1 | 58.36.2478 | 47 pF | CER | |
| | C....2 | 58.22.3101 | 100 nF | ALU 10V | |
| | C....3 | 58.22.3101 | 100 nF | ALU 10V | |
| | C....4 | 58.06.5153 | 15 nF | PE 5% | |
| | C....5 | 58.06.5103 | 1 nF | PE 5% | |
| | C....6 | 58.06.5473 | 47 nF | PE 5% | |
| | C....7 | 58.22.3101 | 100 nF | ALU 10V | |
| | C....8 | 58.22.3101 | 100 nF | ALU 10V | |
| | C....9 | 58.22.3101 | 100 nF | ALU 10V | |
| | C....10 | 58.06.5473 | 47 nF | PE 5% | |
| | C....11 | 58.06.5474 | 470 nF | PE 5% | |
| | C....12 | 58.06.5105 | 1 uF | PE 5% | |
| | C....13 | 58.06.5153 | 15 nF | PE 5% | |
| | C....14 | 58.06.5102 | 1 nF | PE | |
| | C....15 | 58.06.5103 | 1 nF | PE | |
| | C....16 | 58.22.3101 | 100 nF | ALU 25V | |
| | C....17 | 58.22.3101 | 100 nF | ALU 25V | |
| | C....18 | 58.06.5102 | 1 nF | PE | |
| | C....19 | 58.06.5103 | 1 nF | PE | |
| | C....20 | | | not used | |
| | C....21 | | | not used | |
| | C....22 | 58.06.5223 | 22 nF | PE 5% | |
| | C....24 | 58.06.3252 | 1.5 nF | PE | |
| | C....31 | | | not used | |
| | C....32 | | | not used | |
| | C....33 | | | not used | |
| | C....34 | | | not used | |
| | C....35 | | | not used | |
| | C....36 | | | not used | |
| | C....37 | | | not used | |
| | C....38 | | | not used | |
| | C....39 | | | not used | |
| | C....40 | | | not used | |
| | C....41 | | | not used | |
| | C....42 | | | not used | |
| | C...101 | 58.36.2479 | 47 pF | CER | |
| | C...102 | 58.22.3101 | 100 nF | ALU 10V | |

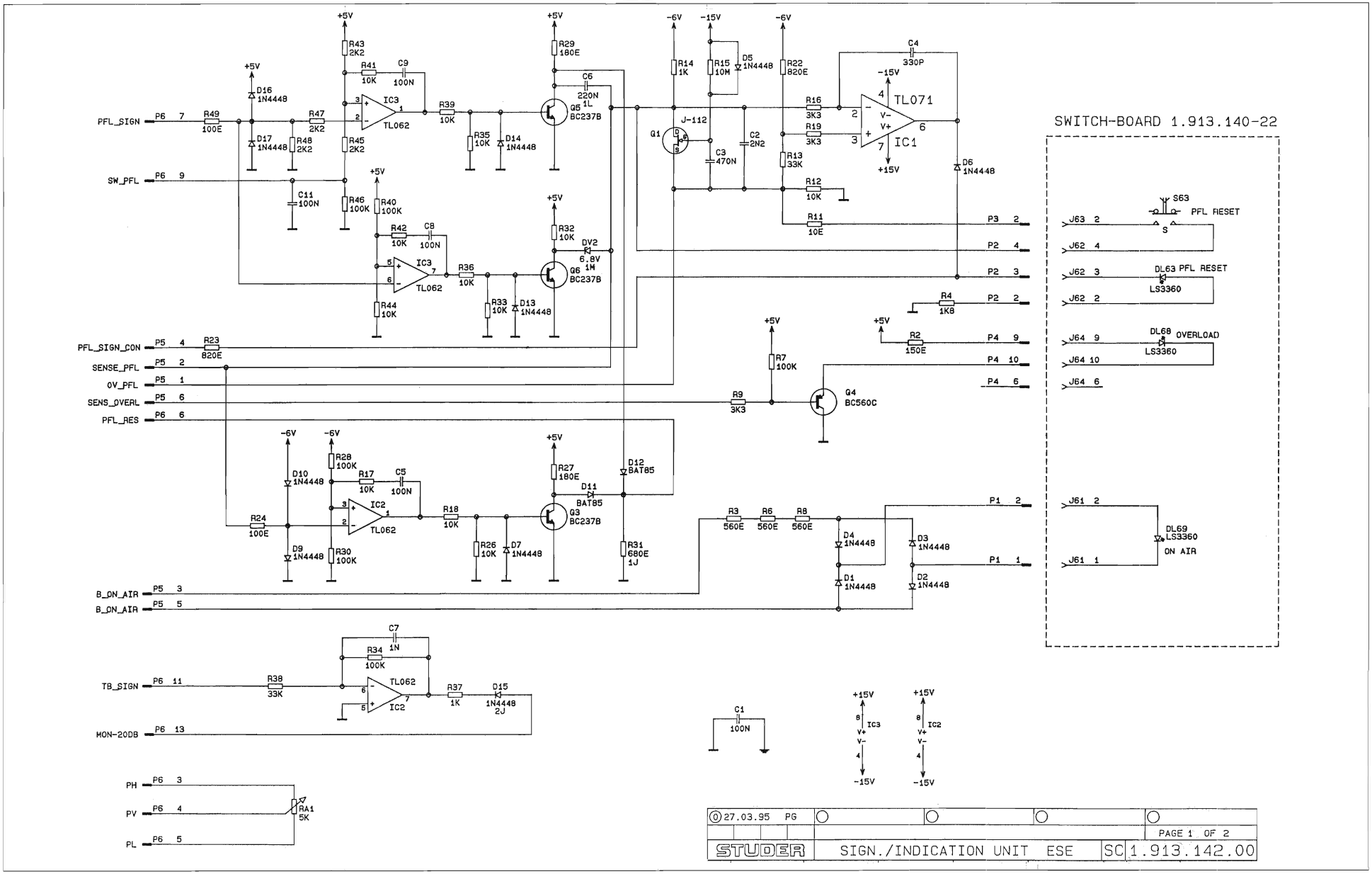


| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | C...103 | 58.22.3101 | 100 nF | ALU 10V | |
| | C...104 | 58.06.5153 | 15 nF | PE 5% | |
| | C...105 | 58.06.5103 | 1 nF | PE 5% | |
| | C...106 | 58.06.5473 | 47 nF | PE 5% | |
| | C...107 | 58.22.3101 | 100 nF | ALU 10V | |
| | C...108 | 58.22.3101 | 100 nF | ALU 10V | |
| | C...109 | 58.22.3101 | 100 nF | ALU 10V | |
| | C...110 | 58.06.5473 | 47 nF | PE 5% | |
| | C...111 | 58.06.5474 | 470 nF | PE 5% | |
| | C...112 | 58.06.5105 | 1 uF | PE 5% | |
| | C...113 | 58.06.5153 | 15 nF | PE 5% | |
| | C...118 | 58.06.5102 | 1 nF | PE 5% | |
| | C...119 | 58.06.5102 | 1 nF | PE | |
| | C...120 | | | not used | |
| | C...123 | 58.06.5223 | 22 nF | PE 5% | |
| | C...124 | 58.06.3252 | 1.5 nF | PE 5% | |
| | D....1 | 50.04.0125 | 1N4148 | | |
| | D....2 | 50.04.0182 | BAW 62 | | |
| | D....3 | 50.04.0125 | 1N4148 | | |
| | D....4 | 50.04.1130 | 6.8 V | z-diode | |
| | D....5 | 50.04.0125 | 1N4148 | | |
| | D....6 | 50.04.0125 | 1N4148 | | |
| | D....7 | 50.04.0125 | 1N4148 | | |
| | D....8 | 50.04.0125 | 1N4148 | | |
| | D...101 | 50.04.0125 | 1N4148 | | |
| | D...102 | 50.04.0182 | BAW 62 | | |
| | D...103 | 50.04.0125 | 1N4148 | | |
| | D...104 | 50.04.0125 | 1N4148 | | |
| | D...105 | 50.04.0422 | 1N4448 | | |
| | IC....1 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC....2 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |
| | IC....3 | 50.09.0116 | OP 07 | single op. amp. | Ra. |
| | IC....4 | 50.09.0116 | OP 07 | single op. amp. | Ra. |
| | IC....5 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC....6 | 50.09.0119 | TL 062 | dual op. amp. | Ra.NE |

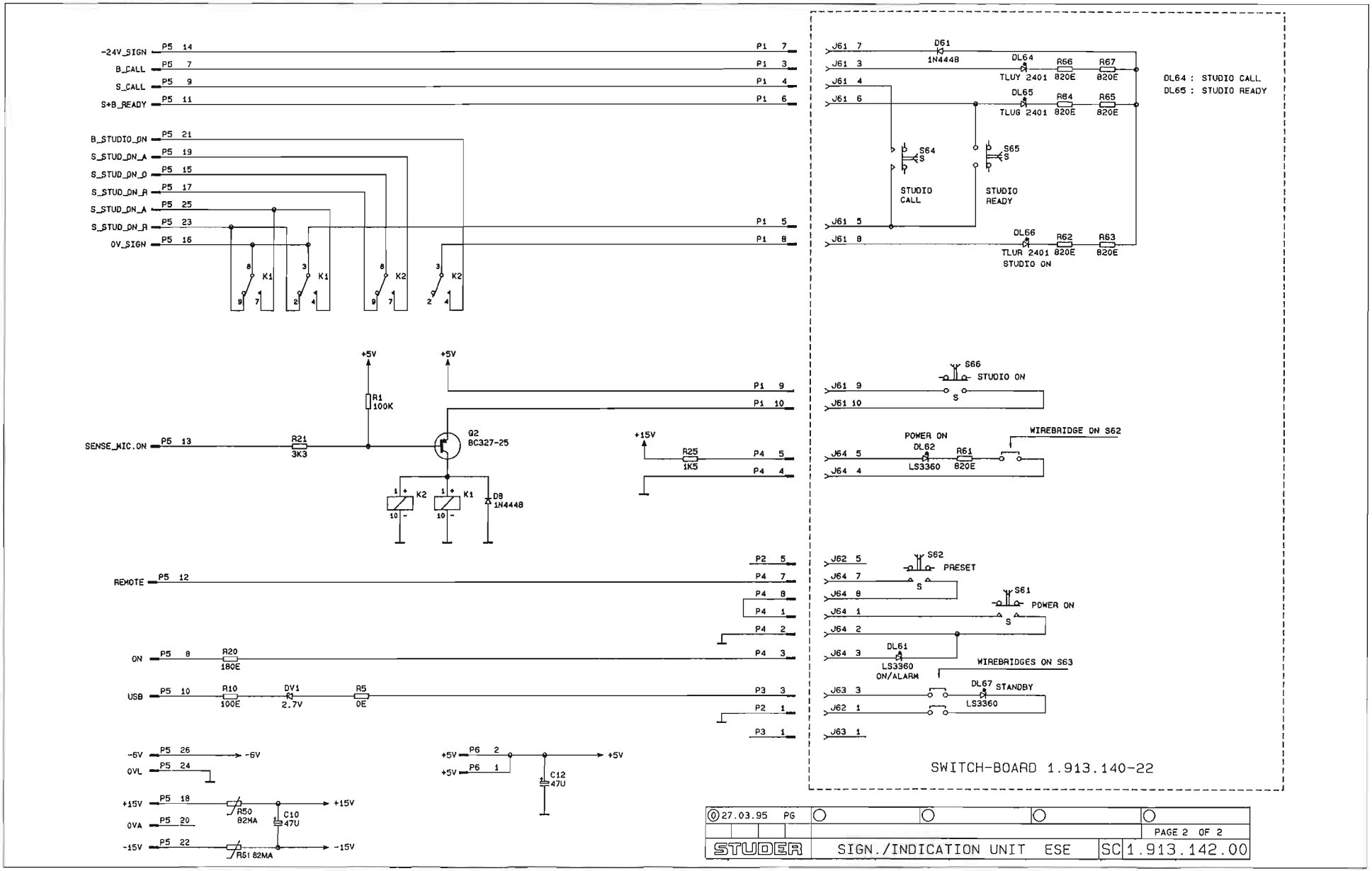


| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | R....56 | 57.11.3821 | 820 Ohm | 5% 0.25W MF | |
| | R....57 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....58 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....59 | 57.11.3273 | 27 kOhm | 5% 0.25W MF | |
| | R....60 | 58.01.9104 | 100 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....61 | 57.11.3273 | 27 kOhm | 5% 0.25W MF | |
| | R....62 | 57.11.3103 | 10 kOhm | 5% 0.25W MF | |
| | R....63 | 57.11.3333 | 33 kOhm | 5% 0.25W MF | |
| | R....69 | 57.11.3103 | 10 kOhm | 5% 0.25W MF | |
| | R....70 | 58.01.9104 | 100 kOhm | 10% 0.5 W PVM trimming resistor | |
| | R....71 | 57.11.3103 | 10 kOhm | 5% 0.25W MF | |
| | R....72 | 57.11.3333 | 33 kOhm | 5% 0.25W MF | |
| | R....73 | 57.11.3104 | 100 kOhm | 5% 0.25W MF | |
| | R....77 | 57.11.3103 | 10 kOhm | 5% 0.25W MF | |
| | R....78 | 57.11.3223 | 22 kOhm | 5% 0.25W MF | |
| | R....80 | 57.11.3102 | 1 kOhm | 5% 0.25W MF | |
| | R....81 | 57.11.3102 | 1 kOhm | 5% 0.25W MF | |
| | R....83 | 57.11.3104 | 100 kOhm | 5% 0.25W MF | |
| | R....84 | 57.11.6226 | 22 MOhm | 5% 0.25W MF | |
| | R....85 | 57.11.3683 | 68 kOhm | 5% 0.25W MF | |
| | R....86 | 57.11.3303 | 30 kOhm | 5% 0.25W MF | |
| | R....87 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R....88 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R....89 | 58.01.9104 | 100 kOhm | 10% 0.5W PVM trimming resistor | |
| | R....103 | 57.11.3333 | 33 kOhm | 5% 0.25W MF | |
| | R....104 | 57.11.3682 | 6.8 kOhm | 5% 0.25W MF | |
| | R....105 | 58.01.9202 | 2 kOhm | 10% 0.5W PVM trimming resistor | |
| | R....106 | 57.11.3104 | 100 kOhm | 5% 0.25W MF | |
| | R....107 | 57.11.3821 | 820 Ohm | 1% 0.25W MF | |
| | R....108 | 57.11.3102 | 1 kOhm | 1% 0.25W MF | |
| | R....109 | 57.11.3821 | 820 Ohm | 1% 0.25W MF | |
| | R....110 | 57.11.3222 | 2.2 kOhm | 1% 0.25W MF | |
| | R....111 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R....112 | 57.11.3222 | 2.2 kOhm | 1% 0.25W MF | |
| | R....113 | 57.11.3744 | 240 kOhm | 1% 0.25W MF | |
| | R....116 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R....117 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |

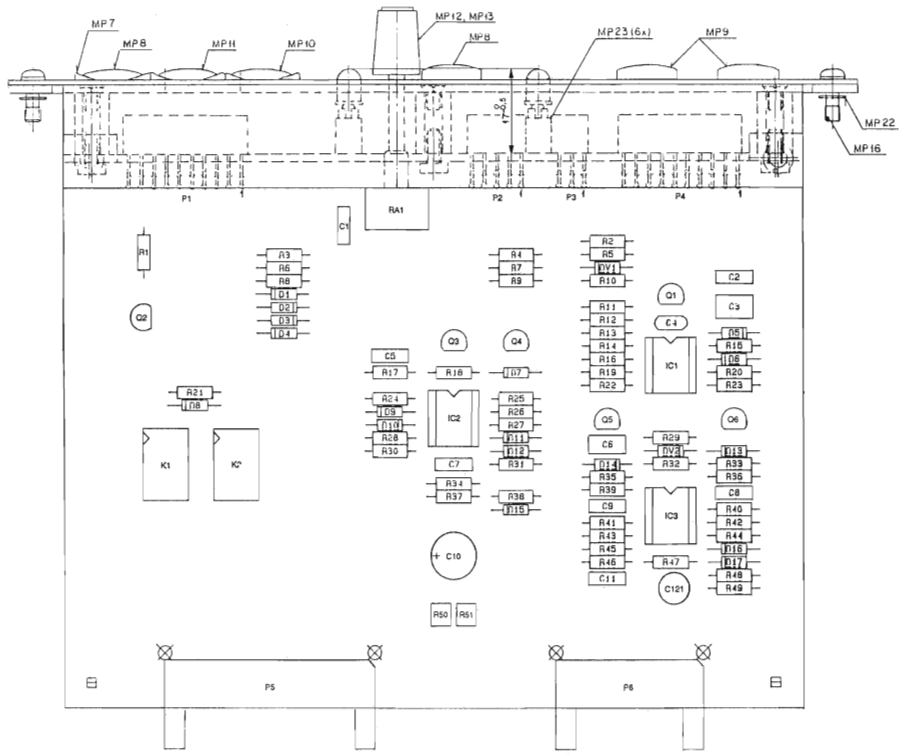
**SIGN. / INDICATION UNIT 1.913.142.00**
- Switch Board 1.913.140.22

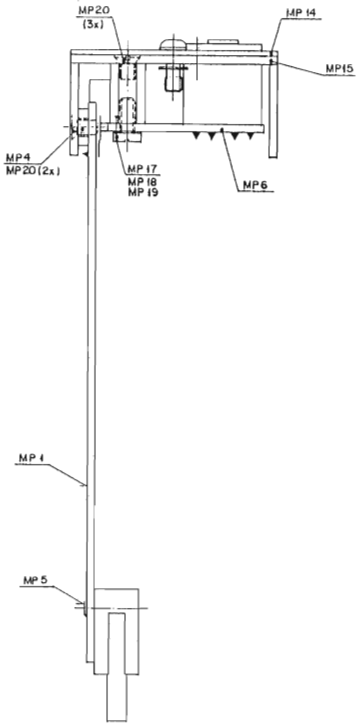


**SIGN. / INDICATION UNIT 1.913.142.00**
- Switch Board 1.913.140.22

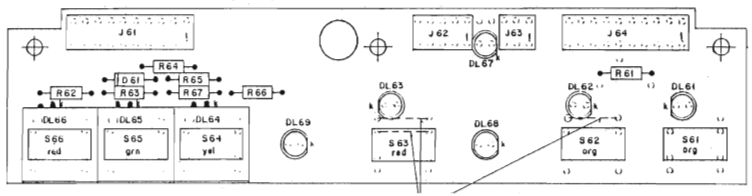


## SIGN. / INDICATION UNIT 1.913.142.00
- Switch Board 1.913.140.22




Switch Board 1.913.140.22 (MP6)




MP24: 3 wire bridges on solder side

| Ad | POS. | REF.No. | DESCRIPTION | | | | MANUFACTURER |
|---|---|---|---|---|---|---|---|
| | C.....1 | 59.06.0104 | .1 U | 10%, | 63V, | PETP | |
| | C.....2 | 59.06.0222 | 2200 P | 10%, | 63V, | PETP | |
| | C.....3 | 59.06.0474 | .47 U | 10%, | 63V, | PETP | |
| | C.....4 | 59.34.4331 | 330 P | 5%, | N750, | CER | |
| | C.....5 | 59.06.0104 | .1 U | 10%, | 63V, | PETP | |
| | C.....6 | 59.06.0224 | .22 U | 10%, | 63V, | PETP | |
| | C.....7 | 59.06.0102 | 1000 P | 10%, | 63V, | PETP | |
| | C.....8 | 59.06.0104 | .1 U | 10%, | 63V, | PETP | |
| | C.....9 | 59.06.0104 | .1 U | 10%, | 63V, | PETP | |
| | C....10 | 59.22.6470 | 47 U | -20%, | 40V, | EL | |
| | C....11 | 59.06.0104 | .1 U | 10%, | 63V, | PETP | |
| | C....12 | 59.22.3470 | 47 U | -20%, | 10V, | EL | |
| | D.....1 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....2 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....3 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....4 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....5 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....6 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....7 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....8 | 50.04.0125 | 1N 4448 | | | SI | |
| | D.....9 | 50.04.0125 | 1N 4448 | | | SI | |
| | D....10 | 50.04.0125 | 1N 4448 | | | SI | |
| | D....11 | 50.04.0127 | BAT 85 | | | | |
| | D....12 | 50.04.0127 | BAT 85 | | | | |
| | D....13 | 50.04.0125 | 1N 4448 | | | SI | |
| | D....14 | 50.04.0125 | 1N 4448 | | | SI | |
| | D....15 | 50.04.0125 | 1N 4448 | | | SI | |
| | D....16 | 50.04.0125 | 1N 4448 | | | SI | |
| | D....17 | 50.04.0125 | 1N 4448 | | | SI | |
| | D....61 | 50.04.0125 | 1N 4448 | | | SI | |
| | DL..61 | 50.04.2129 | LS 3360 | | | RT DIFF | |
| | DL..62 | 50.04.2129 | LS 3360 | | | RT DIFF | |
| | DL..63 | 50.04.2129 | LS 3360 | | | RT DIFF | |
| | DL..64 | 1.010.042.50 | | DL CQY | 75N, | GB GEBOGEN LINKS | |
| | DL..65 | 1.010.041.50 | | DL CQY | 73N, | GN GEBOGEN LINKS | |
| | DL..66 | 1.010.040.50 | | DL CQY | 41NA, | RT GEBOGEN LINKS | |
| | DL..67 | 50.04.2129 | LS 3360 | | | RT DIFF | |
| | DL..68 | 50.04.2129 | LS 3360 | | | RT DIFF | |
| | DL..69 | 50.04.2129 | LS 3360 | | | RT DIFF | |
| | DV....1 | 50.04.1106 | 2.7 V | 5%, | .40W, | Z, | |
| | DV....2 | 50.04.1102 | 6.8 V | 5%, | .40W, | Z, | |
| | IC.....1 | 50.09.0103 | | TL 071 | CP | ,A | |
| | IC.....2 | 50.09.0119 | | TL 062 | ACP | ,A | |
| | IC.....3 | 50.09.0119 | | TL 062 | ACP | ,A | |
| | J.....61 | 54.01.0242 | | LEISTE 10 POL CIS DURCHS | | | |
| | J.....62 | 54.01.0246 | | LEISTE 5 POL CIS DURCHS | | | |
| | J.....63 | 54.01.0239 | | LEISTE 3 POL CIS DURCHS | | | |
| | J.....64 | 54.01.0242 | | LEISTE 10 POL CIS DURCHS | | | |
| | K.....1 | 56.04.0198 | 5 V 2*U | 125V/ 2 A, AG/AU | | | |
| | K.....2 | 56.04.0198 | 5 V 2*U | 125V/ 2 A, AG/AU | | | |
| | MP...1 | 1.913.142.11 | 1 pcs | SIGN / INDICATION PCB / I | | | |
| | MP...2 | 1.913.142.04 | 1 pcs | STUDER NR.-ETIKETTE 10 * 20 | | | |
| | MP...3 | 43.01.0108 | 1 pcs | ESE-WARNSCHILD | | | |
| | MP...4 | 1.010.012.22 | 2 pcs | NIETMUTTER SW 6 M 3 * 2 | | | |
| | MP...5 | 28.99.0119 | 4 pcs | ROHRNIETE D 2.5*0.15* 9 | | | |
| | MP...6 | 1.913.140.22 | 1 pcs | SWITCH BOARD | | | |
| | MP...7 | 55.15.0116 | 3 pcs | KALOTTE FUER 1 LED,L SW | | | |
| | MP...8 | 55.15.0122 | 2 pcs | TASTENKNOPF RT | | | |
| | MP...9 | 55.15.0123 | 2 pcs | TASTENKNOPF OR | | | |
| | MP..10 | 55.15.0124 | 1 pcs | TASTENKNOPF GB | | | |
| | MP..11 | 55.15.0125 | 1 pcs | TASTENKNOPF GN | | | |
| | MP..12 | 42.01.0226 | 1 pcs | KNEBELKNOPF GR D 10/ 4 | | | |
| | MP..13 | 42.01.0250 | 1 pcs | DECKEL H'GR ZU KNOPF-D 10 | | | |
| | MP..14 | 1.913.142.01 | 1 pcs | FRONTSCHILD SIGN / INDICATION | | | |
| | MP..15 | 1.913.140.02 | 1 pcs | TRAEGER | | | |
| | MP..16 | 1.010.022.21 | 2 pcs | LINSENSCHRAUBE IS SPEZ.M3X8 SW | | | |
| | MP..17 | 1.010.022.27 | 3 pcs | MUTTERBOLZEN M 3 * 12 | | | |
| | MP..18 | 24.16.1030 | 3 pcs | RIPPENSCHEIBE D 3.2/5.5 | | | |
| | MP..19 | 21.51.8354 | 3 pcs | LIN-SCHR. IS , NI , M 3 * 6 | | | |
| | MP..20 | 21.51.2353 | 5 pcs | S - SCHR. IS , NI , M 3 * 5 | | | |
| | MP..21 | 21.01.2354 | 3 pcs | S - SCHR. , ZN , M 3 * 6 | | | |
| | MP..22 | 24.16.3023 | 2 pcs | WELLENSICHERUNG 2.3 | | | |
| | MP..23 | 53.03.0240 | 6 pcs | SOCKEL FUER LED 50.04.2129 | | | |
| | MP..24 | 1.010.324.64 | 3 pcs | DRAHTBRUECKE U, 4.3*10.2, 0.6 | | | |
| | P.....1 | 54.01.0430 | | LEISTE 10 POL CIS WINKEL | | | |
| | P.....2 | 54.01.0425 | | LEISTE 5 POL CIS WINKEL | | | |
| | P.....3 | 54.01.0423 | | LEISTE 3 POL CIS WINKEL | | | |

## SIGN. / INDICATION UNIT 1.913.142.00

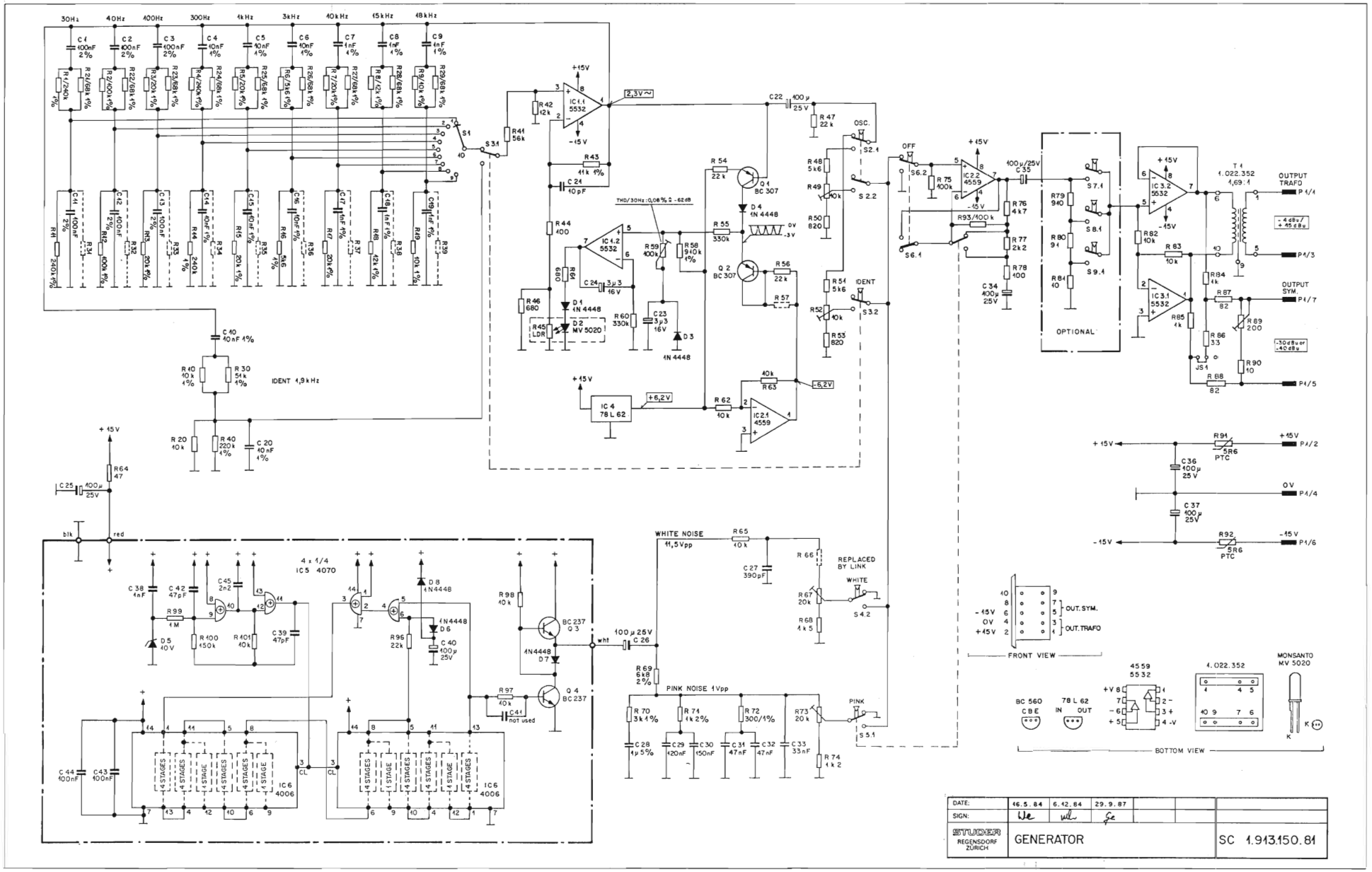
- Switch Board 1.913.140.22



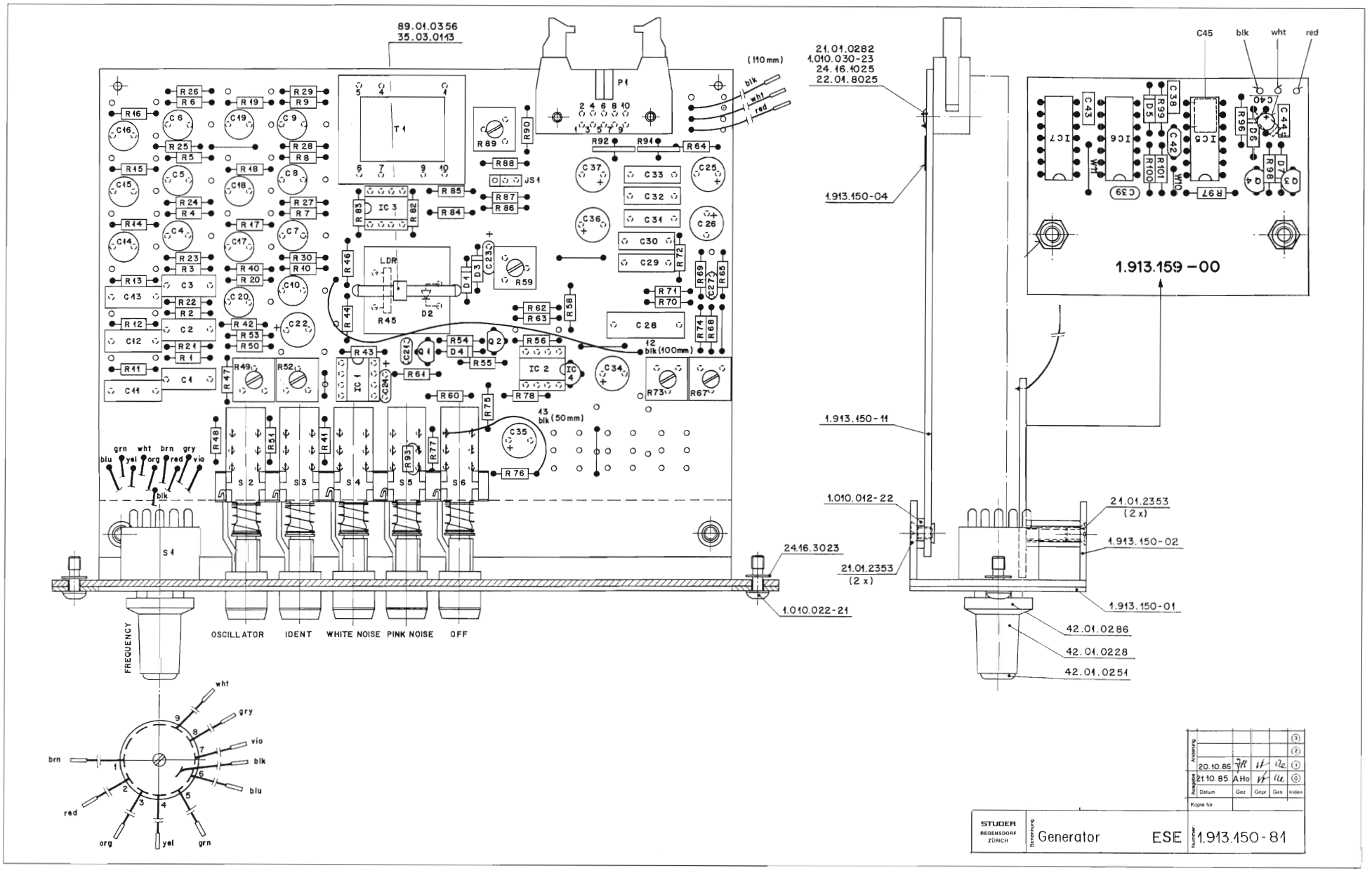
| Ad | ..POS.. | ...REF.No.. | | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|---|
| | P.....4 | 54.01.0430 | | LEISTE 10 POL CIS WINKEL | |
| | P.....5 | 54.14.2013 | | STECKER 26 P ,AU, WINKEL | |
| | P.....6 | 54.14.2012 | | STECKER 16 P ,AU, WINKEL | |
| | Q.....1 | 50.03.0850 | J-112 | ,A | |
| | Q.....2 | 50.03.0851 | BC 327-25 | | |
| | Q.....3 | 50.03.0436 | BC 237 B | 547 B, 550B, | |
| | Q.....4 | 50.03.0601 | BC 560 C | ,A | |
| | Q.....5 | 50.03.0436 | BC 237 B | 547B, 550B, | |
| | Q.....6 | 50.03.0436 | BC 237 B | 547B, 550B, | |
| | R.....1 | 57.11.3104 | 100 K | 1%, 0207, | MF |
| | R.....2 | 57.11.3151 | 150 | 1%, 0207, | MF |
| | R.....3 | 57.11.3561 | 560 | 1%, 0207, | MF |
| | R.....4 | 57.11.3182 | 1.8 K | 1%, 0207, | MF |
| | R.....5 | 57.11.9000 | 0 | 0207, | MF |
| | R.....6 | 57.11.3561 | 560 | 1%, 0207, | MF |
| | R.....7 | 57.11.3104 | 100 K | 1%, 0207, | MF |
| | R.....8 | 57.11.3561 | 560 | 1%, 0207, | MF |
| | R.....9 | 57.11.3332 | 3.3 K | 1%, 0207, | MF |
| | R....10 | 57.11.3101 | 100 | 1%, 0207, | MF |
| | R....11 | 57.11.3100 | 10 | 1%, 0207, | MF |
| | R....12 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....13 | 57.11.3333 | 33 K | 1%, 0207, | MF |
| | R....14 | 57.11.3102 | 1 K | 1%, 0207, | MF |
| | R....15 | 57.11.5106 | 10 M | 5%, 0207, | MF |
| | R....16 | 57.11.3332 | 3.3 K | 1%, 0207, | MF |
| | R....17 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....18 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....19 | 57.11.3332 | 3.3 K | 1%, 0207, | MF |
| | R....20 | 57.11.3181 | 180 | 1%, 0207, | MF |
| | R....21 | 57.11.3332 | 3.3 K | 1%, 0207, | MF |
| | R....22 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....23 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....24 | 57.11.3101 | 100 | 1%, 0207, | MF |
| | R....25 | 57.11.3152 | 1.5 K | 1%, 0207, | MF |
| | R....26 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....27 | 57.11.3181 | 180 | 1%, 0207, | MF |
| | R....28 | 57.11.3104 | 100 K | 1%, 0207, | MF |
| | R....29 | 57.11.3181 | 180 | 1%, 0207, | MF |
| | R....30 | 57.11.3104 | 100 K | 1%, 0207, | MF |
| | R....31 | 57.11.3681 | 680 | 1%, 0207, | MF |
| | R....32 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....33 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....34 | 57.11.3104 | 100 K | 1%, 0207, | MF |
| | R....35 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....36 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....37 | 57.11.3102 | 1 K | 1%, 0207, | MF |
| | R....38 | 57.11.3333 | 33 K | 1%, 0207, | MF |
| | R....39 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....40 | 57.11.3104 | 100 K | 1%, 0207, | MF |
| | R....41 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....42 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....43 | 57.11.3222 | 2.2 K | 1%, 0207, | MF |
| | R....44 | 57.11.3103 | 10 K | 1%, 0207, | MF |
| | R....45 | 57.11.3222 | 2.2 K | 1%, 0207, | MF |
| | R....46 | 57.11.3104 | 100 K | 1%, 0207, | MF |
| | R....47 | 57.11.3222 | 2.2 K | 1%, 0207, | MF |
| | R....48 | 57.11.3222 | 2.2 K | 1%, 0207, | MF |
| | R....49 | 57.11.3101 | 100 | 1%, 0207, | MF |
| | R....50 | 57.92.1820 | 94 MA | 60V, 50 OHM, | PTC |
| | R....51 | 57.92.1820 | 94 MA | 60V, 50 OHM, | PTC |
| | R....61 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....62 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....63 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....64 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....65 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....66 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | R....67 | 57.11.3821 | 820 | 1%, 0207, | MF |
| | RA....1 | 1.010.301.58 | | POT 5K LIN; | |
| | S.....61 | 55.15.0112 | 1 TASTE | 2*U, | IMPULS PRINT |
| | S.....62 | 55.15.0112 | 1 TASTE | 2*U, | IMPULS PRINT |
| | S.....63 | 55.15.0112 | 1 TASTE | 2*U, | IMPULS PRINT |
| | S.....64 | 55.15.0112 | 1 TASTE | 2*U, | IMPULS PRINT |
| | S.....65 | 55.15.0113 | 1 TASTE | 2*U, | RAST, PRINT |
| | S.....66 | 55.15.0113 | 1 TASTE | 2*U, | RAST, PRINT |

1.913.142.00 SIGN./INDICATION UNIT PG 95/03/27 (00)

## AUDIO GENERATOR 1.913.150.81



## AUDIO GENERATOR 1.913.150.81



## AUDIO GENERATOR 1.913.150.81

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | | | MANUFACTURER |
|---|---|---|---|---|---|---|---|
| | C.....1 | 59.99.0254 | 100 nF | 2% | | PE | |
| | C.....2 | 59.99.0254 | 100 nF | 2% | | PE | |
| | C.....3 | 59.99.0254 | 100 nF | 2% | | PE | |
| | C.....4 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....5 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....6 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....7 | 59.05.1102 | 1 nF | 2% | | PE | |
| | C.....8 | 59.05.1102 | 1 nF | 2% | | PE | |
| | C.....9 | 59.05.1102 | 1 nF | 2% | | PE | |
| | C.....10 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....11 | 59.99.0254 | 100 nF | 2% | | PE | |
| | C.....12 | 59.99.0254 | 100 nF | 2% | | PE | |
| | C.....13 | 59.99.0254 | 100 nF | 2% | | PE | |
| | C.....14 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....15 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....16 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....17 | 59.05.1102 | 1 nF | 2% | | PE | |
| | C.....18 | 59.05.1102 | 1 nF | 2% | | PE | |
| | C.....19 | 59.05.1102 | 1 nF | 2% | | PE | |
| | C.....20 | 59.05.1103 | 10 nF | 2% | | PE | |
| | C.....21 | 59.34.1100 | 10 pF | 5% | | CE | |
| | C.....22 | 59.22.5101 | 100 uF | -20% | 16V | EL | |
| | C.....23 | 59.26.2339 | 3.3 uF | -20% | 16V | SAL | |
| | C.....24 | 59.26.2339 | 3.3 uF | -20% | 16V | SAL | |
| | C.....25 | 59.22.5101 | 100 uF | -20% | 16V | EL | |
| | C.....26 | 59.22.5101 | 100 uF | -20% | 16V | EL | |
| | C.....27 | 59.34.5391 | 390 pF | | | CE | |
| | C.....28 | 59.02.0105 | 1 uF | 5% | | PC | |
| | C.....29 | 59.02.2124 | 120 nF | 5% | | PC | |
| | C.....30 | 59.02.2154 | 150 nF | 5% | | PC | |
| | C.....31 | 59.02.5473 | 47 nF | 5% | | PC | |
| | C.....32 | 59.02.5473 | 47 nF | 5% | | PC | |
| | C.....33 | 59.02.5433 | 33 nF | 5% | | PC | |
| | C.....34 | 59.22.5101 | 100 uF | -20% | 16V | EL | |
| | C.....35 | 59.22.5101 | 100 uF | -20% | 16V | EL | |
| | C.....36 | 59.22.5101 | 100 uF | -20% | 16V | EL | |
| | C.....37 | 59.22.5101 | 100 uF | -20% | 16V | EL | |
| (10) | C.....38 | 59.06.5102 | 1 nF | 10% | | PE | |
| (10) | C.....39 | 59.34.2470 | 47 pF | 5% | | CE | |
| (10) | C.....40 | 59.26.9109 | 1 uF | -20% | | SAL | |
| (10) | C.....41 | | not used | | | | |
| (10) | C.....42 | 59.34.2470 | 47 pF | 5% | | CE | |
| (10) | C.....43 | 59.06.5104 | 100 nF | 20% | | PE | |
| (10) | C.....44 | 59.06.5104 | 100 nF | 20% | | PE | |
| | D.....1 | 50.04.0125 | 1N4448 | | | | any |
| | D.....2 | 50.04.2104 | MV5020 | red | | | GI, Lix |
| | D.....3 | 50.04.0125 | 1N4448 | | | | any |
| | D.....4 | 50.04.0125 | 1N4448 | | | | any |
| (10) | D.....5 | 50.04.1108 | Z 5.6V | 400mW | | | |
| (10) | D.....6 | 50.04.0125 | 1N4448 | | | | any |
| (10) | D.....7 | 50.04.0125 | 1N4448 | | | | any |
| | IC.....1 | 50.09.0105 | NE5532 N | dual | op. amp. | | Ti, Sig, Ra |
| | IC.....2 | 50.09.0107 | RC4559 N | dual | op. amp. | | Ti, Sig, Ra |
| | IC.....3 | 50.09.0105 | NE5532 N | dual | op. amp. | | Ti, Sig, Ra |
| | IC.....4 | 50.10.0101 | 78L62 | 6.2V | | | Fc |
| (10) | IC.....5 | 50.07.0070 | CD4070 | 2-input | EXDR | | Fc, Mot |
| (10) | IC.....6 | 50.07.1006 | CD4006 | 18 bit | SHIFT-REGISTER | | Fc, Mot |
| (10) | IC.....7 | 50.07.1006 | CD4006 | 18 bit | SHIFT-REGISTER | | Fc, Mot |
| | P.....7 | 54.14.2011 | 10 pin | | | | Yamaichi |
| | Q.....1 | 50.03.0496 | BC 560 | PNP | IC>100mA, | B>100 | any |
| | Q.....2 | 50.03.0496 | BC 560 | PNP | IC>100mA, | B>100 | any |
| (10) | Q.....3 | 50.03.0436 | BC 237 | NPN | IC>100mA, | B>100 | any |
| (10) | Q.....4 | 50.03.0436 | BC 237 | NPN | IC>100mA, | B>100 | any |
| | R.....1 | 57.11.3244 | 240 kOhm | 1% | 0.25W | MF | |
| | R.....2 | 57.11.3104 | 100 kOhm | 1% | 0.25W | MF | |
| | R.....3 | 57.11.3203 | 20 kOhm | 1% | 0.25W | MF | |
| | R.....4 | 57.11.3244 | 240 kOhm | 1% | 0.25W | MF | |
| | R.....5 | 57.11.3203 | 20 kOhm | 1% | 0.25W | MF | |
| | R.....6 | 57.11.3562 | 5.6 kOhm | 1% | 0.25W | MF | |
| | R.....7 | 57.11.3203 | 20 kOhm | 1% | 0.25W | MF | |
| | R.....8 | 57.11.3123 | 12 kOhm | 1% | 0.25W | MF | |
| | R.....9 | 57.11.3103 | 10 kOhm | 1% | 0.25W | MF | |
| | R....10 | 57.11.3103 | 10 kOhm | 1% | 0.25W | MF | |
| | R....11 | 57.11.3244 | 240 kOhm | 1% | 0.25W | MF | |
| | R....12 | 57.11.3104 | 100 kOhm | 1% | 0.25W | MF | |
| | R....13 | 57.11.3203 | 20 kOhm | 1% | 0.25W | MF | |
| | R....14 | 57.11.3244 | 240 kOhm | 1% | 0.25W | MF | |
| | R....15 | 57.11.3203 | 20 kOhm | 1% | 0.25W | MF | |
| | R....16 | 57.11.3562 | 5.6 kOhm | 1% | 0.25W | MF | |
| | R....17 | 57.11.3203 | 20 kOhm | 1% | 0.25W | MF | |

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | | | MANUFACTURER |
|---|---|---|---|---|---|---|---|
| | R....18 | 57.11.3123 | 12 kOhm | 1% | 0.25W | MF | |
| | R....19 | 57.11.3103 | 10 kOhm | 1% | 0.25W | MF | |
| | R....20 | 57.11.3103 | 10 kOhm | 1% | 0.25W | MF | |
| | R....21 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....22 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....23 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....24 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....25 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....26 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....27 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....28 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....29 | 57.11.3683 | 68 kOhm | 1% | 0.25W | MF | |
| | R....30 | 57.11.3513 | 51 kOhm | 1% | 0.25W | MF | |
| | R....31 | | not used | 1% | 0.25W | MF | |
| | R....32 | | not used | 1% | 0.25W | MF | |
| | R....33 | | not used | 1% | 0.25W | MF | |
| | R....34 | | not used | 1% | 0.25W | MF | |
| | R....35 | | not used | 1% | 0.25W | MF | |
| | R....36 | | not used | 1% | 0.25W | MF | |
| | R....37 | | not used | 1% | 0.25W | MF | |
| | R....38 | | not used | 1% | 0.25W | MF | |
| | R....39 | | not used | 1% | 0.25W | MF | |
| | R....40 | 57.11.4224 | 220 kOhm | 5% | 0.25W | MF | |
| | R....41 | 57.11.4563 | 56 kOhm | 5% | 0.25W | MF | |
| | R....42 | 57.11.3123 | 12 kOhm | 1% | 0.25W | MF | |
| | R....43 | 57.11.3113 | 11 kOhm | 2% | 0.25W | MF | |
| | R....44 | 57.11.4101 | 100 Ohm | 5% | 0.25W | MF | |
| | R....45 | 57.99.0135 | 1 kOhm | | | LDR | heimann |
| | R....46 | 57.11.4681 | 680 Ohm | 5% | 0.25W | MF | |
| | R....47 | 57.11.4223 | 22 kOhm | 5% | 0.25W | MF | |
| | R....48 | 57.11.4562 | 5.6 kOhm | 5% | 0.25W | MF | |
| | R....49 | 58.01.8103 | 10 kOhm | 10% | 0.50W | trimming resistor | |
| | R....50 | 57.11.4821 | 820 Ohm | 5% | 0.25W | MF | |
| | R....51 | 57.11.4562 | 5.6 kOhm | 5% | 0.25W | MF | |
| | R....52 | 58.01.8103 | 10 kOhm | 10% | 0.50W | trimming resistor | |
| | R....53 | 57.11.4821 | 820 Ohm | 5% | 0.25W | MF | |
| | R....54 | 57.11.4223 | 22 kOhm | 5% | 0.25W | MF | |
| | R....55 | 57.11.4334 | 330 kOhm | 5% | 0.25W | MF | |
| | R....56 | 57.11.4223 | 22 kOhm | 5% | 0.25W | MF | |
| | R....57 | | not used | | | | |
| | R....58 | 57.11.3914 | 910 kOhm | 1% | 0.25W | MF | |
| | R....59 | 58.01.8104 | 100 kOhm | 10% | 0.50W | trimming resistor | |
| | R....60 | 57.11.4334 | 330 kOhm | 5% | 0.25W | MF | |
| | R....61 | 57.11.4681 | 680 Ohm | 5% | 0.25W | MF | |
| | R....62 | 57.11.4103 | 10 kOhm | 5% | 0.25W | MF | |
| | R....63 | 57.11.4103 | 10 kOhm | 5% | 0.25W | MF | |
| | R....64 | 57.11.4470 | 47 Ohm | 5% | 0.25W | MF | |
| | R....65 | 57.11.4103 | 10 kOhm | 5% | 0.25W | MF | |
| | R....66 | | link | | | | |
| | R....67 | 58.01.8203 | 20 kOhm | 10% | 0.50W | trimming resistor | |
| | R....68 | 57.11.4152 | 1.5 kOhm | 5% | 0.25W | MF | |
| | R....69 | 57.11.4682 | 6.8 kOhm | 2% | 0.25W | MF | |
| | R....70 | 57.11.3302 | 3 kOhm | 1% | 0.25W | MF | |
| | R....71 | 57.11.4102 | 1 kOhm | 2% | 0.25W | MF | |
| | R....72 | 57.11.3301 | 300 Ohm | 2% | 0.25W | MF | |
| | R....73 | 58.01.8203 | 20 kOhm | 10% | 0.50W | trimming resistor | |
| | R....74 | 57.11.4122 | 1.2 kOhm | 5% | 0.25W | MF | |
| | R....75 | 57.11.4104 | 100 kOhm | 5% | 0.25W | MF | |
| | R....76 | 57.11.4472 | 4.7 kOhm | 2% | 0.25W | MF | |
| | R....77 | 57.11.4222 | 2.2 kOhm | 2% | 0.25W | MF | |
| | R....78 | 57.11.4101 | 100 Ohm | 2% | 0.25W | MF | |
| | R....79 | | 910 Ohm | 1% | | 57113911 | option |
| | R....80 | | 91 Ohm | 1% | | 57113910 | option |
| | R....81 | | 10 Ohm | 1% | | 57113100 | option |
| | R....82 | 57.11.4103 | 10 kOhm | 5% | 0.25W | MF | |
| | R....83 | 57.11.4103 | 10 kOhm | 5% | 0.25W | MF | |
| | R....84 | 57.11.4102 | 1 kOhm | 2% | 0.25W | MF | |
| | R....85 | 57.11.4102 | 1 kOhm | 2% | 0.25W | MF | |
| | R....86 | 57.11.4330 | 33 Ohm | 2% | 0.25W | MF | |
| | R....87 | 57.11.4820 | 82 Ohm | 2% | 0.25W | MF | |
| | R....88 | 57.11.4820 | 82 Ohm | 2% | 0.25W | MF | |
| | R....89 | 58.01.8201 | 200 Ohm | 10% | 0.50W | trimming resistor | |
| | R....90 | 57.11.4100 | 10 Ohm | 5% | 0.25W | MF | |
| | R....91 | 57.99.0209 | 5.6 Ohm | | | PTC | Philips Nr. 2322 662 91005 |
| | R....92 | 57.99.0209 | 5.6 Ohm | | | PTC | Philips Nr. 2322 662 91005 |
| | R....93 | 57.11.4104 | 100 kOhm | 5% | 0.25W | MF | |
| (10) | R....94 | | not exist | | | | |
| (10) | R....95 | | not exist | | | | |
| (10) | R....96 | 57.11.4223 | 22 kOhm | 2% | 0.25W | MF | |
| (10) | R....97 | 57.11.4103 | 10 kOhm | 2% | 0.25W | MF | |
| (10) | R....98 | 57.11.4103 | 10 kOhm | 2% | 0.25W | MF | |
| (10) | R....99 | 57.11.4105 | 1 MOhm | 5% | 0.25W | MF | |

## AUDIO GENERATOR 1.913.150.81

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | | MANUFACTURER |
|---|---|---|---|---|---|---|
| (10) | R...100 | 57.11.4154 | 150 kOhm | 2% | 0.25W MF | |
| (10) | R...101 | 57.11.4103 | 10 kOhm | 2% | 0.25W MF | |
| | S.....1 | 55.13.0025 | 1*9 rotary-switch | | | St |
| | S.....2 | 55.15.0005 | 2*U | 2u gold | | |
| | S.....3 | | | | | |
| | S.....4 | | 2*U | see S 2 | | |
| | S.....5 | | 2*U | see S 2 | | |
| | S.....6 | | 2*U | see S 2 | | |
| | S.....7 | | 2*U | 2u gold | option | |
| | S.....8 | | 2*U | see S 7 | option | |
| | S.....9 | | 2*U | see S 7 | option | |
| | T.....1 | 1.022.352.00 | output trafo 1.69:1 | | | St |

CE = Ceramic, CF = Carbon Film, EL = Electrolytic, MF = Metal Film, PE = Polyester, PP = Polypropylen, PS = Polystyrol, SAL = Solid Aluminium Lacquard

MANUFACTURERS: Bu = Burndy, Ex = Exar, Fc = Fairchild, GI = General Instrument,
HP = Hewlett Packard, ITT = Intermetall, Mot = Motorola,
NS = National Semiconductors, Ph = Philips, Ra = Raytheon, Sig = Signetics,
Six = Siliconix, St = Studer, TI = Texas Instrument, CK = Cšk

1.913.150.81 Generator AE 85/11/12 (00)

END
→

# Compressor/Limiter/Noise gate

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## 1. General:




The Compressor/Limiter/Noise gate unit 1.913.155 can be installed in the instrument panel of the mixing console versions 900, 963 and 970. The unit can be routed to any input or output channel by using the insert points (insert patch panel).

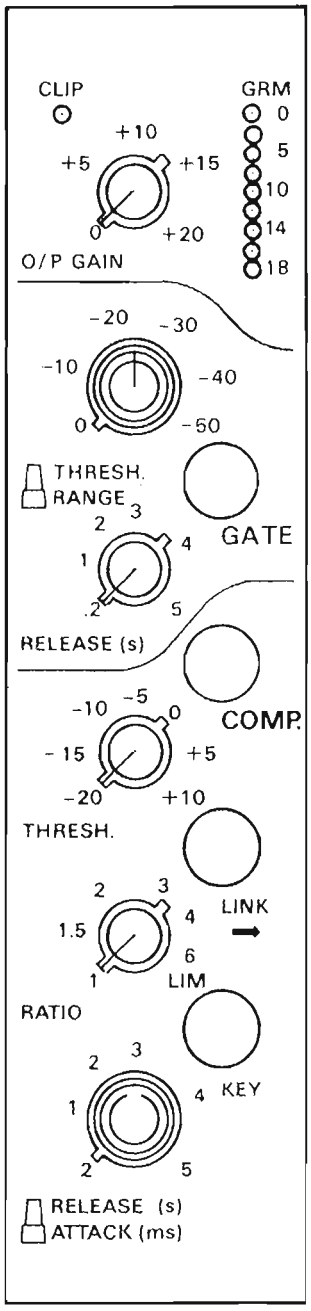
The main applications of this unit are twofold:

- The Limiter/Compressor part allows a compression of the dynamic range including the limitation of the maximum output level by an adjustable limiter threshold. Attack and decay times are adjustable; the decay characteristic is additionally determined by the program structures to avoid unwanted pumping effects.

- The noise gate reduces the basic noise of connected sources in program intermissions by reducing the gain of the channel if a preset value is undershot. Further applications can be found in drum and bass recordings where a noise gate can be used to produce a dry sound with high presence character.

The use of STUDER VCA's enables a high S/N ratio with minimal distortion.

## 2. Operating elements




**General:**

CLIP: Overload LED
LED threshold: 2 dB below limiter threshold.

GRM: Gain reduction meter, shows gain reduction of compressor/noise gate path in dB.

GAIN: Potentiometer for increasing the output level up to 20 dB.

**Noise gate:**

GATE: Key to activate the noise gate.

THRESH: Noise gate threshold, adjustable in the range of 0 to - 50 dB.

RANGE: Noise gate gain reduction, adjustable in the range of 0 to - 50dB.

RELEASE: Time between the undershoting of the noise gate threshold and the start of the noise gate action. Adjustable range: 0.2 to 5 seconds. (see fig. 1)

**Compressor / Limiter:**

COMPR.: Key to activate the compressor.

LINK: Control voltage coupling with the adjacent compressor/ limiter/noise gate unit on the right hand side. The higher voltage of either one takes control over both.

KEY: Key to activate the AC input voltage at the auxiliary input KEY to control the VCA gain. Applications: De-essing, voice-over, delayed gate. (see fig. 4)

THRESH: Compressor threshold, adjustable range - 20 to + 10 dB. (see fig. 2)

RATIO: Compression ratio, adjustable range 1:1 (no compression effect) to 20:1 (limiter effect).

ATTACK: Compressor attack time. Adjustable range 0.2 to 5 ms. (see fig. 3)

RELEASE: Compressor decay time. The scale refers to a static 6 dB gain reduction and LIM setting of ratio. The actual decay time is program dependent and optimized, thus differences to the pot position may occur. (see fig. 3)

## 3. Noise Gate: Release time diagram

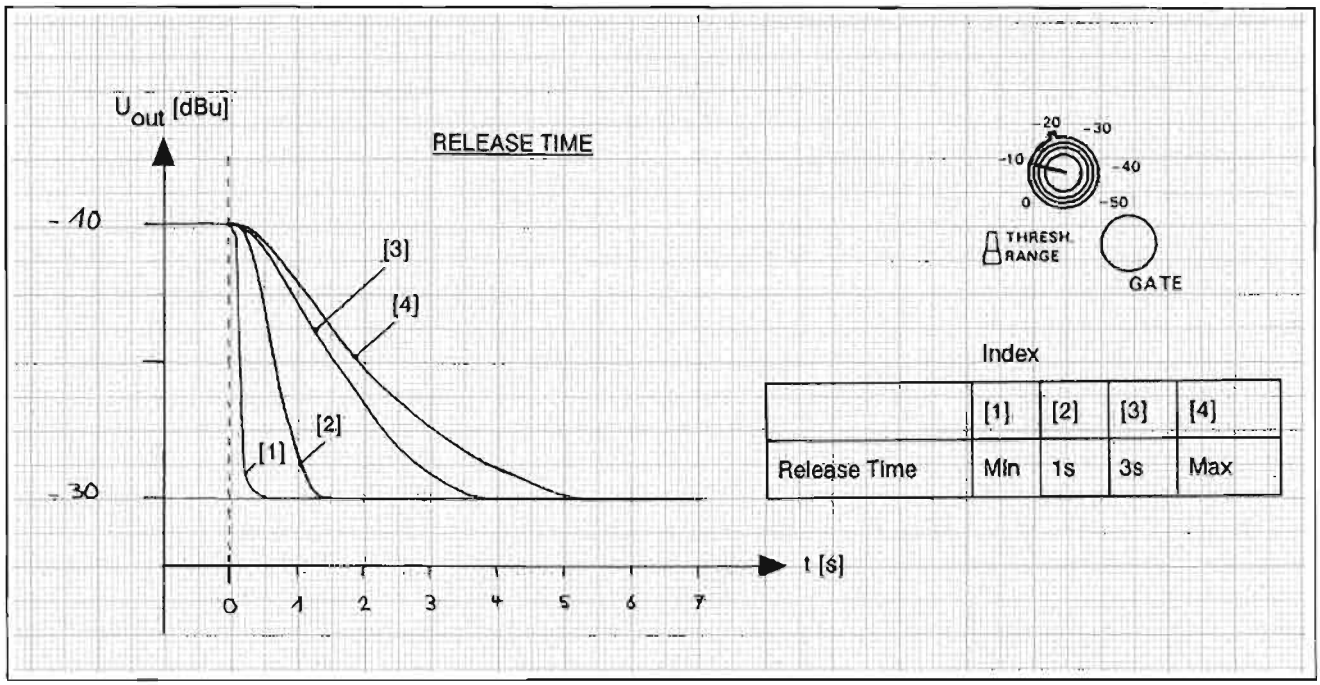



Fig. 1: Four different release time characteristics at a threshold of -10dBu and a noise gate gain reduction range of -20dBu.

## 4. Compressor / Limiter: Threshold range diagram

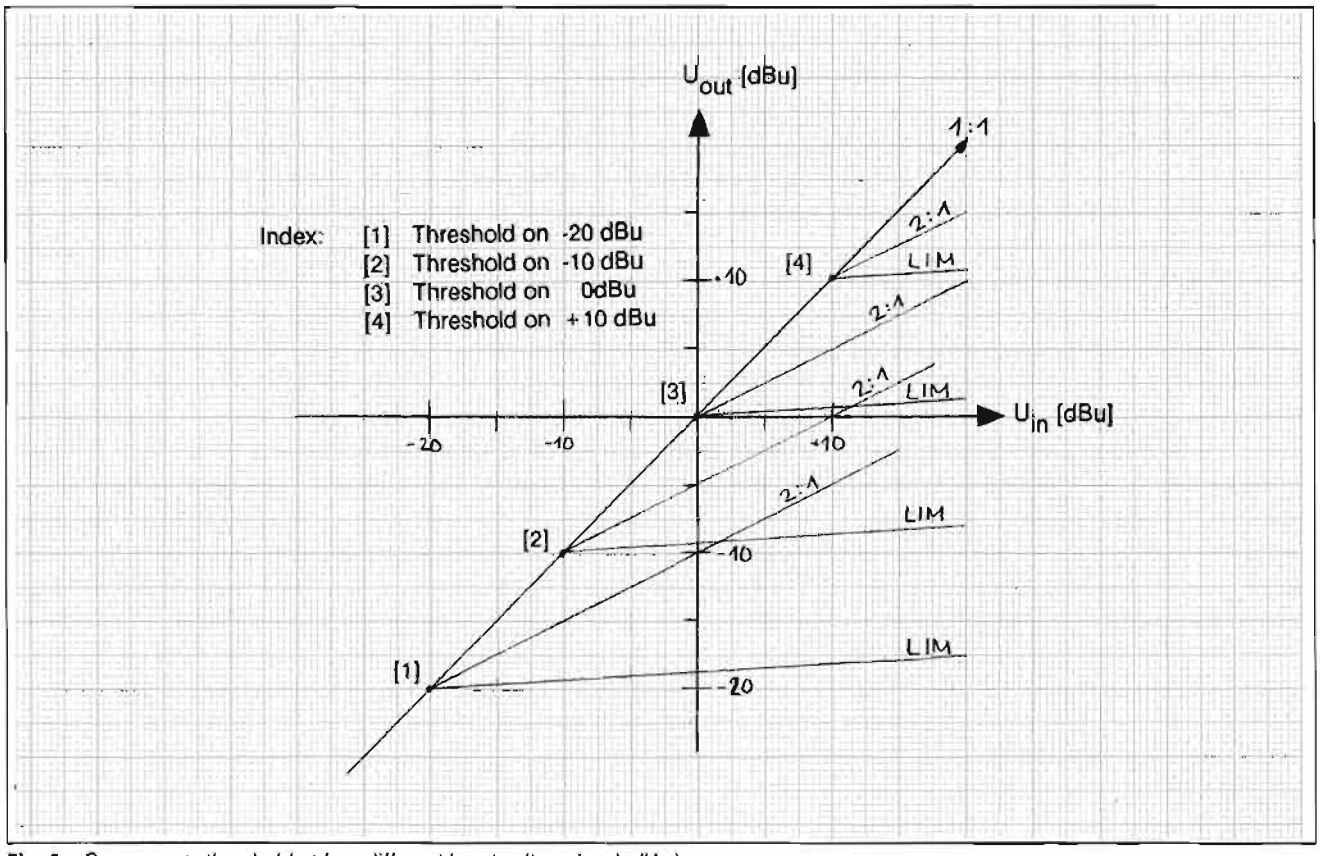



Fig. 2: Compressor threshold at four different input voltage levels ($U_{in}$).

## 5. Compressor / Limiter: Attack and release time

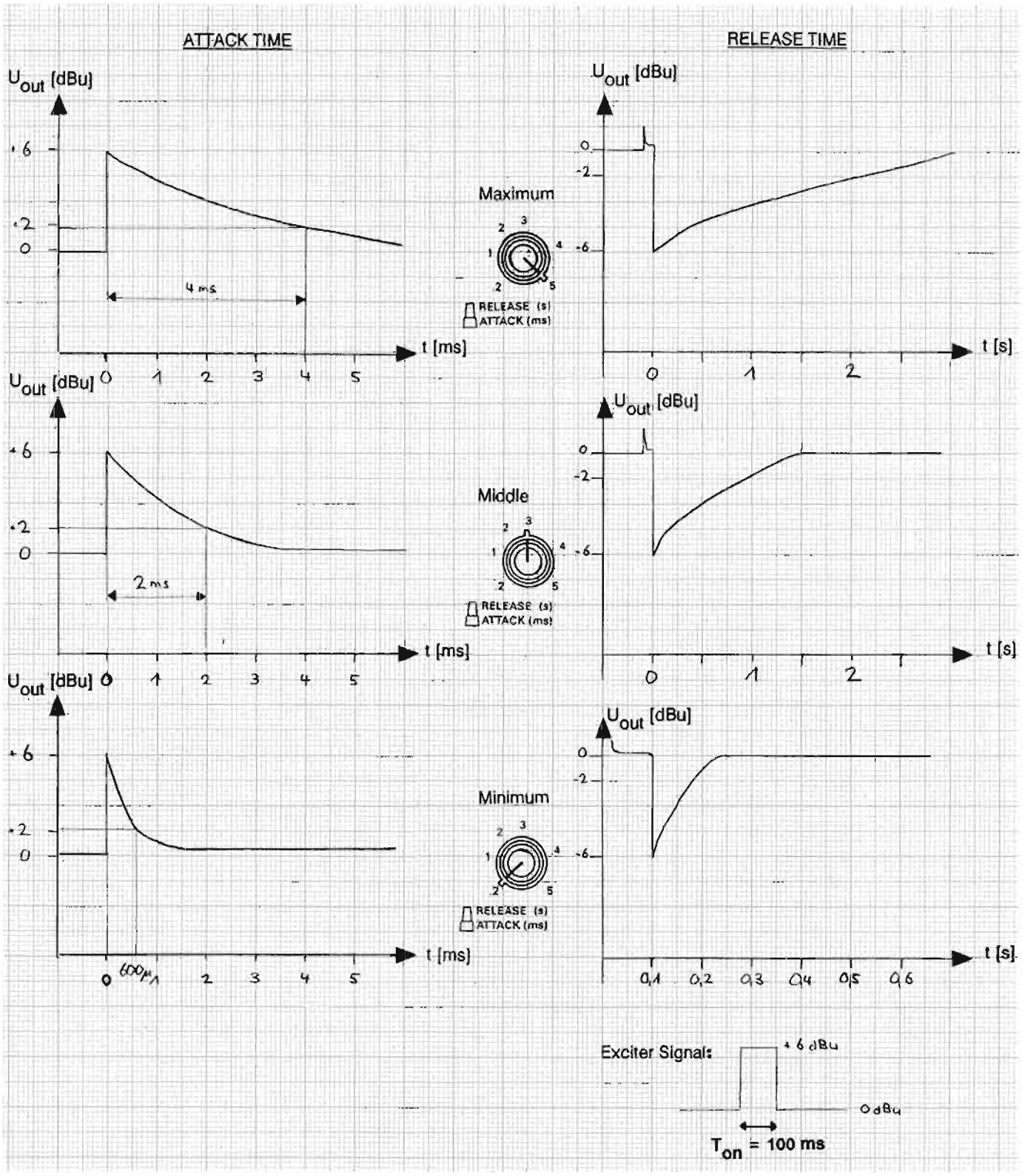



Fig. 3: The compressor/ limiter - characteristics at three different values of the attack- and release time.

## 6. Block diagram

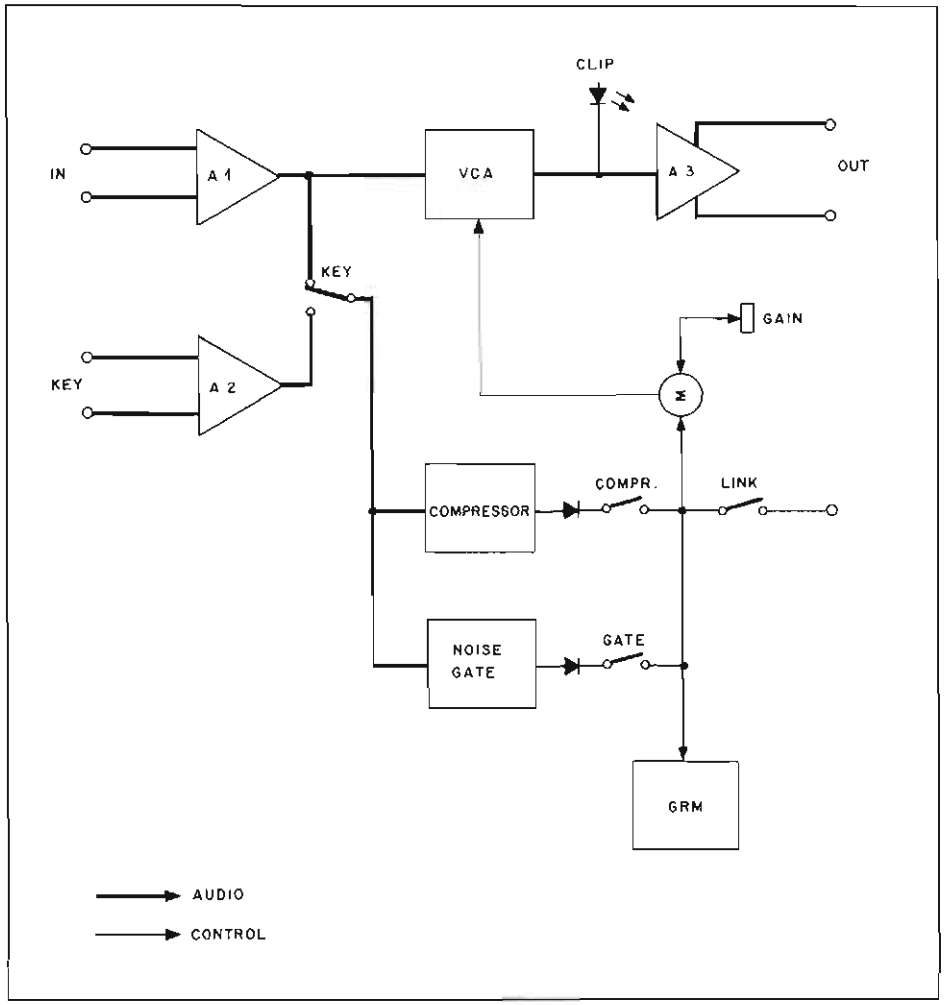



Fig. 4

## 7. Technical data:

| | | |
|---|---|---|
| **Current consumption:** | ± 15 V:<br>- 6 V: | typ. 86 mA, max. 130 mA<br>typ. 10 mA, max. 20 mA |
| **Frequency response:** | ≤ 0.3 dB | 30 to 15.000 Hz |
| **Noise level:** | ≤- 95 dBu<br>≤-100 dBu | with gain 0 dB and noise gate off.<br>with gain 0 dB and noise gate on. |
| **Distortion:** | ≤- 60 dB with input + 16 dBu, output 0 dBu, threshold 0 dB, compressor on, Ratio LIM, max release time, in the range of 30 to 15.000 Hz. | |
| **Adjustments:** | No service adjustments required. | |

# Kompressor / Limiter / Noise gate

INHALT Seite

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## 1. Allgemeines




Die Kompressor / Limiter / Noise-gate Baugruppe Nr. 1.913.155 kann ins Instrumentenpanel der Mischpulte STUDER 900, 963 und 970 eingebaut werden. Unter Benützung der Einschleifpunkte (Insert patch panel) kann die Einheit auf jeden gewünschten Ein- oder Ausgangskanal geschaltet werden.

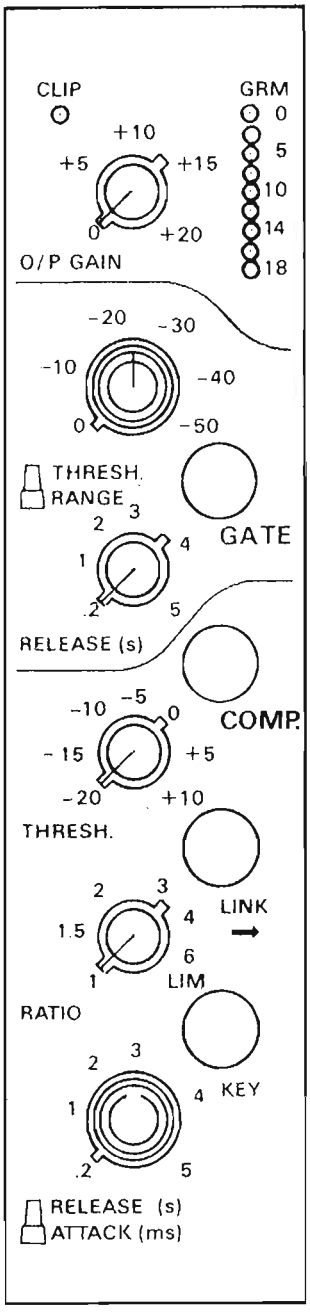
Die Baugruppe dient folgenden Hauptanwendungen:

- Der Begrenzer / Kompressor Teil erlaubt eine Kompression des Dynamikbereichs in wählbarem Ausmass. Der verstellbare Schwellenwert (threshold) ermöglicht die Begrenzung des maximalen Ausgangspegels. Die Ansprech- und Rücklaufzeiten sind frei wählbar. Um unerwünschte Pumpeffekte zu verhindern, wird die Rücklaufzeit zusätzlich von der Programmstruktur beeinflusst.

- Das Noise-gate vermindert das Grundgeräusch zugeschalteter Quellen bei Programmunterbrüchen. Die Verstärkung des betreffenden Kanals wird reduziert, sobald ein vorgewählter Signalpegel unterschritten wird. Weitere Anwendungen bieten sich bei Schlagzeug- und Bass - Aufnahmen um einen trockenen Klang mit hoher Präsenz zu erzielen.

Aus der Verwendung von STUDER VCA's resultieren der hohe Geräuschspannungsabstand und die minimalen Verzerrungen.

## 2. Bedienungselemente




**Allgemein:**

CLIP: Übersteuerungs - Leuchtdiode
LED Schwellenwert: 2dB unterhalb der Begrenzerschwelle.

GRM: (Gain reduction meter) Anzeigeinstrument für die Verstärkungsreduktion des Kompressor / Noise-gate Signalweges. (in dB )

GAIN: Potentiometer zur Anpassung des Ausgangspegels bis 20 dB.

**Noise-gate:**

GATE.: Diese Drucktaste schaltet die Noise-gate Funktion ein bzw. aus.

THRESH.: Noise-gate Einsatzschwelle, einstellbar im Bereich von 0 bis -50dB.

RANGE: Verstärkungsreduktion des Noise-gate, einstellbar im Bereich von 0 bis -50 dB

RELEASE: Intervall vom Zeitpunkt des Unterschreitens der Noise-gate Einsatzschwelle bis zum Erreichen der vollen Noise-gate Funktion. Es ist zwischen 0,2 und 5 Sekunden einstellbar. (vgl. Fig. 1)

**Kompressor / Begrenzer:**

COMPR.: Drucktaste zur Aktivierung der Kompressor / Begrenzer Funktion.

LINK: Koppelung der Kompressor/Begrenzer/Noise-gate Funktionen mit der rechts benachbarten Einheit. Dabei kontrolliert die jeweils höhere Steuerspannung beide Einheiten.

KEY: Diese Umschalttaste verwendet die Spannung des Hilfseingangs KEY für die Steuerung der VCA Verstärkung. Anwendungen: 'De-essing' (Hochtonbegrenzung), 'Voice-over' (Pegelregelung von Hintergrundmusik durch Sprechersignal), Gate mit Verzögerung.

THRESH.: Einsatzschwelle des Begrenzers einstellbar von -20 bis +10 dB. (vgl. Fig. 2)

RATIO: Das Kompressionsverhältnis [ $U_{in}/U_{out}$ ] ist einstellbar von 1:1 (keine Kompressionswirkung) bis 20:1 (Begrenzerwirkung).

ATTACK: Kompressor Ansprechzeit. Einstellbereich von 0,2 bis 5 Sekunden. (vgl. Fig. 3)

RELEASE: Kompressor Rücklaufzeit. Die Skala bezieht sich auf eine konstante Verstärkungsreduktion von 6dB bei Limitereinstellung des Ratioreglers. Die wirkliche Rücklaufzeit ist programmabhängig und optimiert. Es können demzufolge Unterschiede zur Reglerposition auftreten. (vgl. Fig. 3)

## 3. Noise-gate: Ansprechzeit Charakteristik

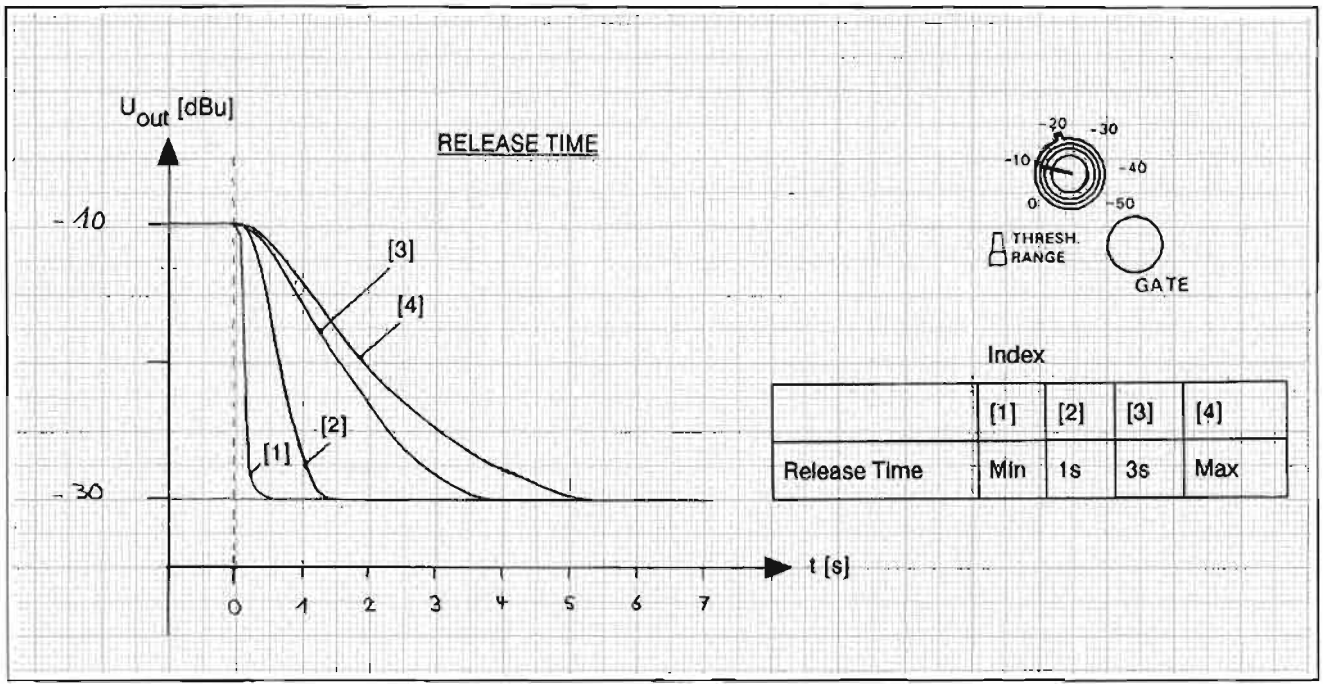



Fig. 1: Vier unterschiedliche Einstellungen der Ansprechzeit bei einem Schwellenwert von -10dBu und einer Verstärkungsreduktion (Range) von -20dBu.

## 4. Kompressor / Limiter: Schwellenwert Diagramm

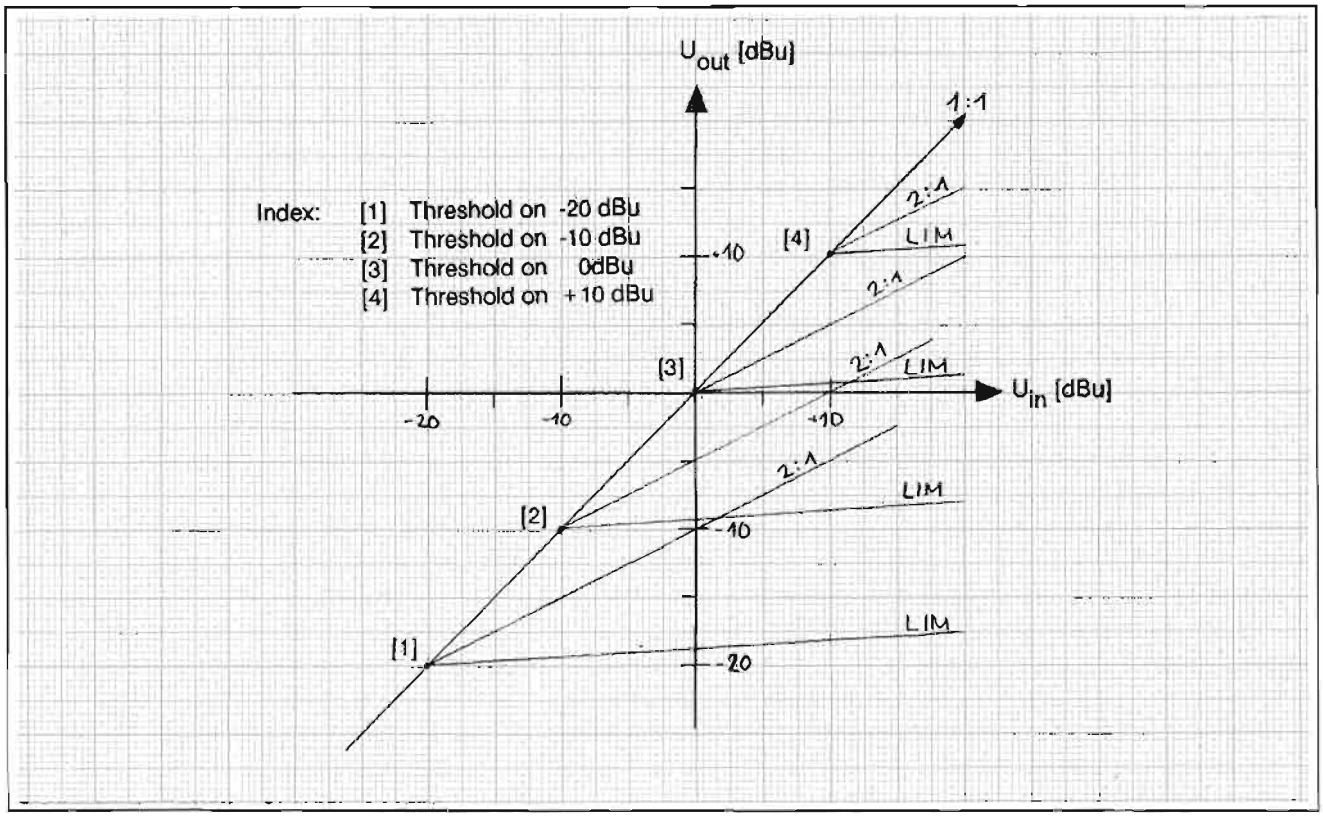



Fig. 2: Wirkung des Kompressors bei vier verschiedenen Schwellenwerten. Das Kompressionsverhältnis (Ratio) ist jeweils schwach (2:1) und maximal (Limiter) gewählt.

## 5. Kompressor Limiter: Ansprech- und Rücklaufzeit

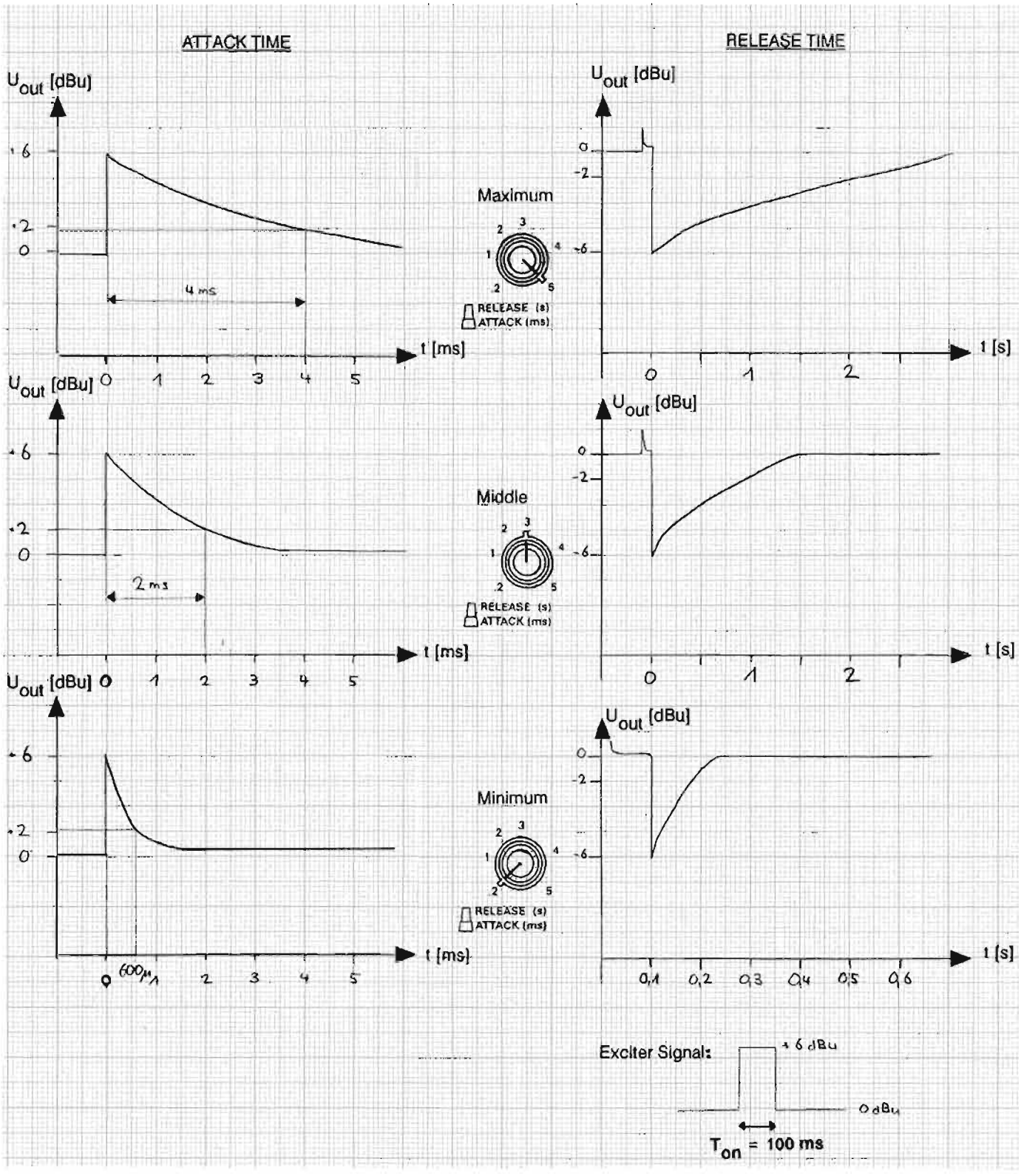



Fig. 3: Charakterisik des Kompressor / Begrenzers bei drei unterschiedlichen Werten der Ansprech- und Rücklaufzeit.

## 6. Blockdiagramm

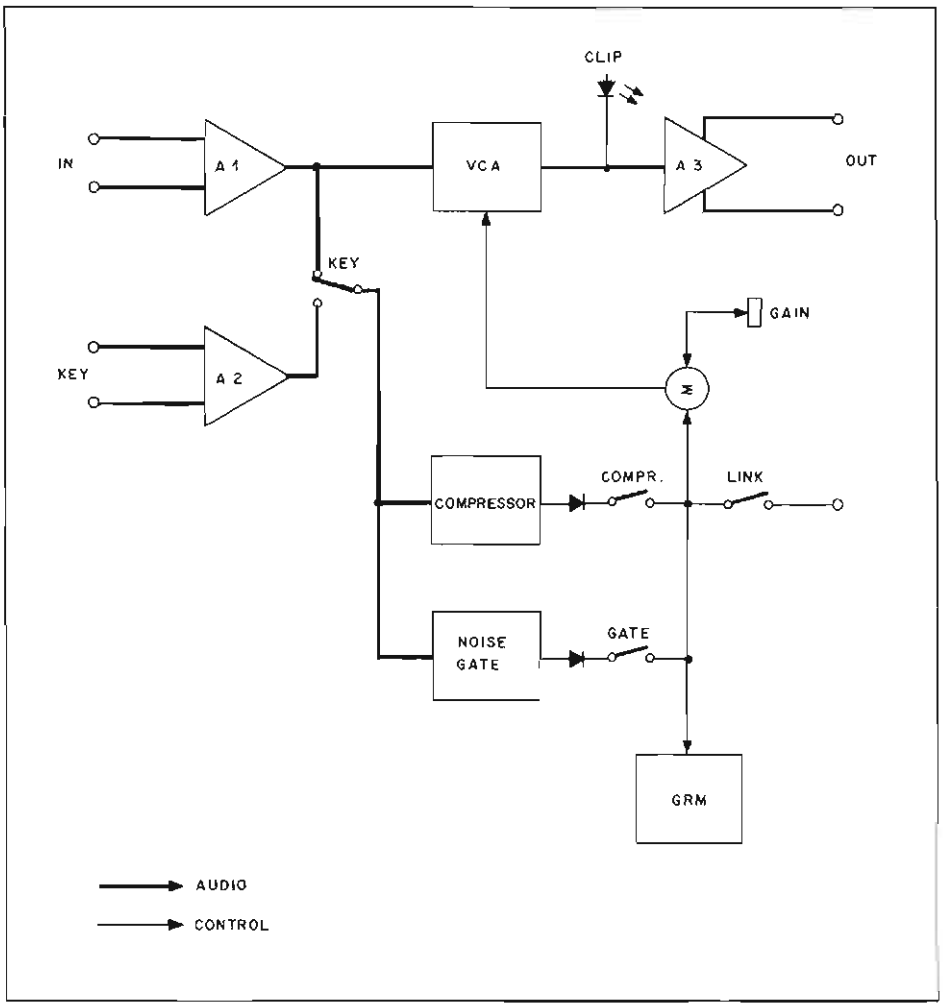


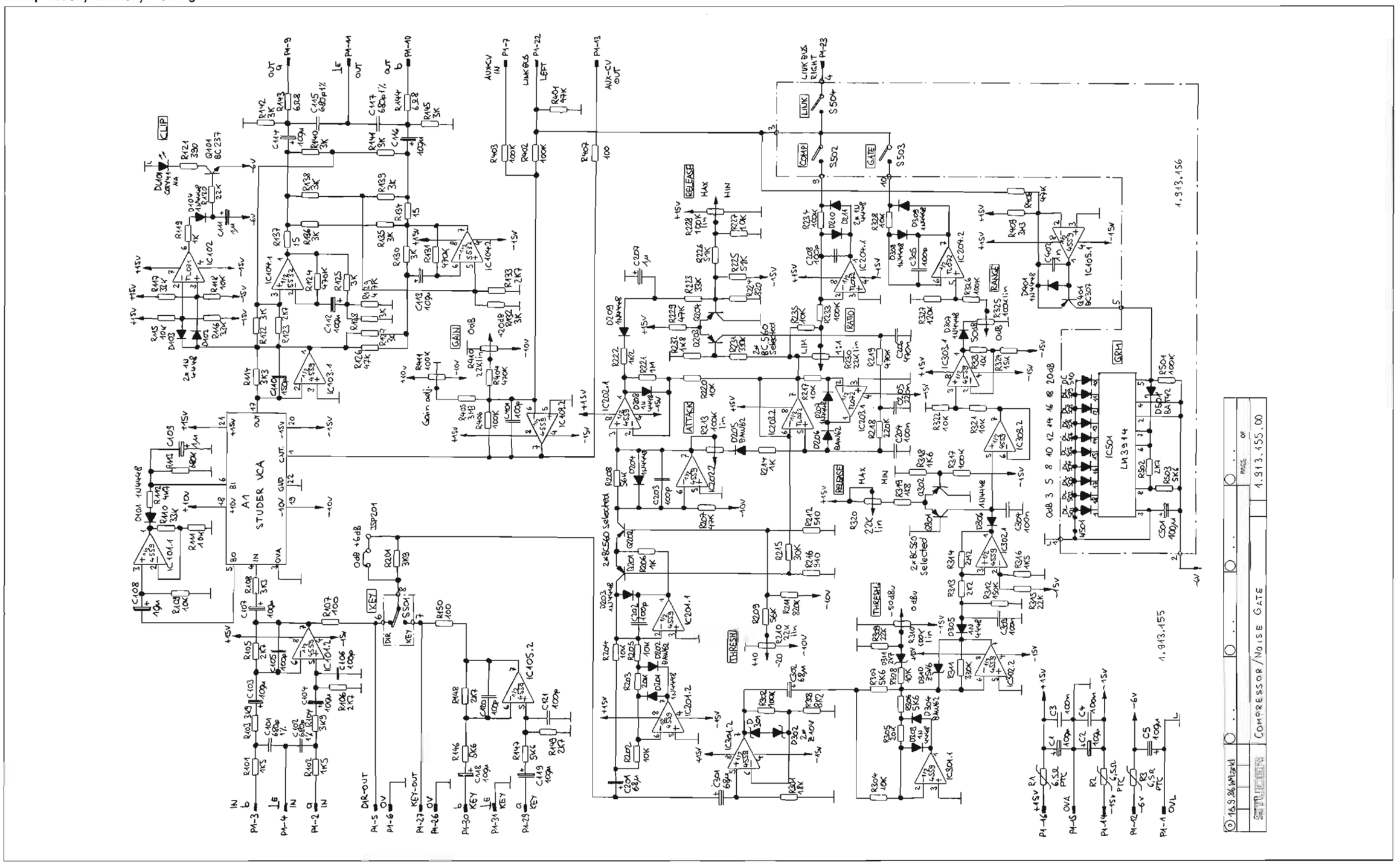

Fig. 4

## 7. Technische Daten

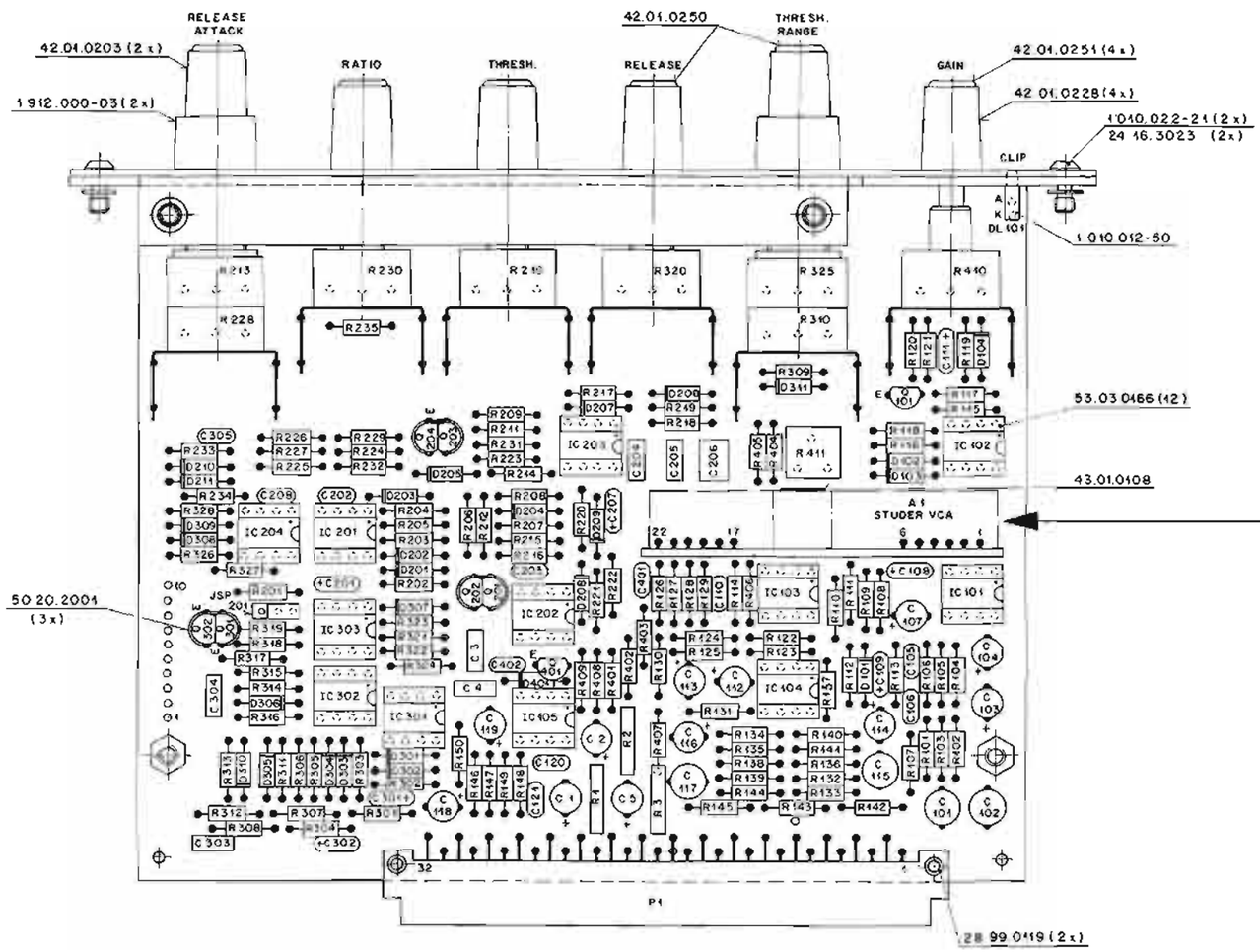
| | | |
|---|---|---|
| **Stromaufnahme:** | ± 15 V:<br>- 6 V | typ. 86mA, max. 130mA,<br>typ. 10mA, max. 20mA, |
| **Frequenzgang:** | ≤ 0,3dB | 30 bis 15'000Hz |
| **Rauschpegel:** | ≤ -95dBu<br>≤-100dBu | bei Verstärkung 0dB und Noise-gate ausgeschaltet<br>bei Verstärkung 0dB und Noise-gate eingeschaltet |
| **Verzerrungen:** | ≤-60dB | im Bereich von 30 bis 15'000Hz unter den Bedingungen: Eingang +16dBu; Ausgang 0dBu; Threshold 0dB; Kompressor ein; Ratio LIM; Release maximal; |
| **Abgleich:** | Nicht erforderlich. | |

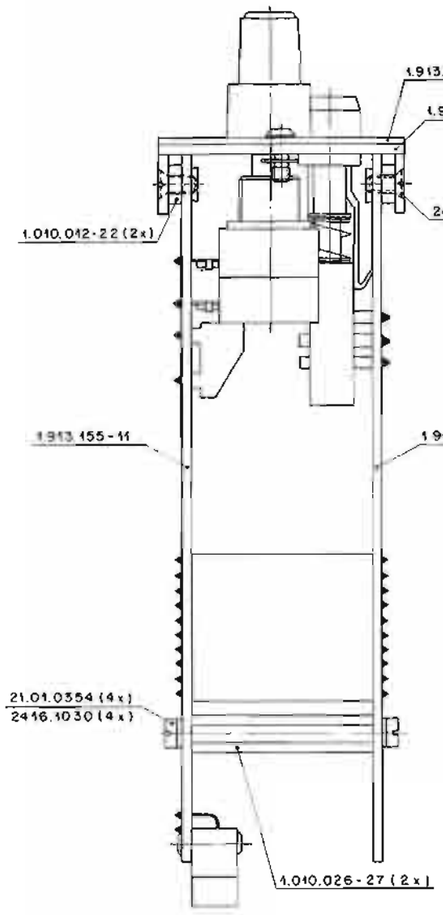
## 8. Circuit diagrams / Schemateil

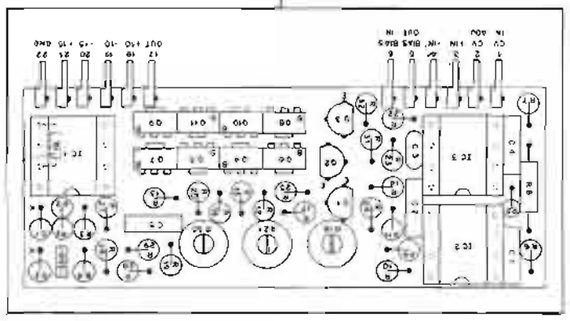
Compressor / Limiter / Noise gate 1.913.155



**Compressor / Limiter / Noise gate 1.913.155**



## Compressor / Limiter / Noise gate 1.913.155

| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---|---|---|---|---|---|---|---|
| (00) | A.....1 | 1.010.110.50 | | Studer-VCA | | | St |
| (02) | A.....1 | 1.911.290.00 | | VCA-BOARD | | | St |
| (03) | A.....1 | 1.911.290.81 | | VCA BOARD | | | St |
| | C.....1 | 59.22.5220 | 22 uF | -20% | 16V | EL | |
| | C.....2 | 59.22.5220 | 22 uF | -20% | 16V | EL | |
| | C.....3 | 59.06.5104 | 100 nF | 10% | | PE | |
| | C.....4 | 59.06.5104 | 100 nF | 10% | | PE | |
| | C.....5 | 59.22.5220 | 22 uF | -20% | 16V | EL | |
| | C...101 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| | C...102 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| (01) | C...103 | 59.22.4101 | 100 uF | -20% | 10V | EL | |
| (01) | C...104 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| | C...105 | 59.34.4101 | 100 pF | | | CE | |
| | C...106 | 59.34.4101 | 100 pF | | | CE | |
| (01) | C...107 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| | C...108 | 59.26.2100 | 10 uF | | 16V | SAL | |
| | C...109 | 59.26.9109 | 1 uF | | 16V | SAL | |
| | C...110 | 59.34.4151 | 150 pF | | | CE | |
| | C...111 | 59.26.9109 | 1 uF | | 16V | SAL | |
| (01) | C...112 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| (01) | C...113 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| (02) | C...114 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| | C...115 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| (01) | C...116 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| | C...117 | 59.05.1681 | 680 pF | 1% | 500V | PP | |
| (01) | C...118 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| (01) | C...119 | 59.22.3101 | 100 uF | -20% | 10V | EL | |
| | C...120 | 59.34.4101 | 100 pF | | | CE | |
| | C...121 | 59 34.4101 | 100 pF | | | CE | |
| | C...201 | 59.26.0680 | 68 uF | | 6V | SAL | |
| | C...202 | 59.34.4101 | 100 pF | | | CE | |
| | C...203 | 59.34.4101 | 100 pF | | | CE | |
| | C...204 | 59.06.5104 | 100 nF | 10% | | PE | |
| | C...205 | 59.06.5224 | 220 nF | 10% | | PE | |
| | C...206 | 59.06.5474 | 470 nF | 10% | | PE | |
| | C...207 | 59.26.9109 | 1 uF | | 16V | SAL | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---|---|---|---|---|---|---|---|
| | C...208 | 59.34.4101 | 100 pF | | | CE | |
| | C...301 | 59.26.0680 | 68 uF | | 6V | SAL | |
| | C...302 | 59.26.0680 | 68 uF | | 6V | SAL | |
| | C...303 | 59.06.5104 | 100 nF | 10% | | PE | |
| | C...304 | 59.06.5104 | 100 nF | 10% | | PE | |
| | C...305 | 59.34.4101 | 100 pF | | | CE | |
| | C...401 | 59.34.4101 | 100 pF | | | CE | |
| | C...402 | 59.32.4102 | 1 nF | | | CG | |
| | D...101 | 50.04.0125 | 1N4448 | | | | any |
| | D...102 | 50.04.0125 | 1N4448 | | | | any |
| | D...103 | 50.04.0125 | 1N4448 | | | | any |
| | D...104 | 50.04.0125 | 1N4448 | | | | any |
| | D...201 | 50.04.0125 | 1N4448 | | | | any |
| | D...202 | 50.04.0132 | BAW 62 | | | | any |
| | D...203 | 50.04.0125 | 1N4448 | | | | any |
| | D...204 | 50.04.0125 | 1N4448 | | | | any |
| | D...205 | 50.04.0132 | BAW 62 | | | | any |
| | D...206 | 50.04.0132 | BAW 62 | | | | any |
| | D...207 | 50.04.0125 | 1N4448 | | | | any |
| | D...208 | 50.04.0125 | 1N4448 | | | | any |
| | D...209 | 50.04.0125 | 1N4448 | | | | any |
| | D...210 | 50.04.0125 | 1N4448 | | | | any |
| | D...211 | 50.04.0125 | 1N4448 | | | | any |
| | D...301 | 50.04.1114 | Z 10 V | 400mW BZX83C 10; BZX55C 10; ZPD 10 | | | Sae;ITT |
| | D...302 | 50.04.1114 | Z 10 V | 400mW BZX83C 10; BZX55C 10; ZPD 10 | | | Sae;ITT |
| | D...303 | 50.04 0125 | 1N4448 | | | | any |
| | D...304 | 50.04.0132 | BAW 62 | | | | any |
| | D...305 | 50.04.0125 | 1N4448 | | | | any |
| | D...306 | 50.04.0125 | 1N4448 | | | | any |
| | D...307 | 50.04.0125 | 1N4448 | | | | any |
| | D...308 | 50.04.0125 | 1N4448 | | | | any |
| | D...309 | 50.04.0125 | 1N4448 | | | | any |
| | D...310 | 50.04.1108 | Z 5.6V | 400mW BZX83C5.6; BZX55C5.6; ZPD5.6 | | | Sae;ITT |
| | D...311 | 50.04.1106 | Z 2.7V | 400mW BZX83C2.7; BZX55C2.7; ZPD2.7 | | | Sae;ITT |
| | D...401 | 50.04.0125 | 1N4448 | | | | any |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---|---|---|---|---|---|---|---|
| | BL..101 | 50.04.2121 | COM-1AR | LED red | | | TFK+HP |
| | IC..101 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | IC..102 | 50.09.0303 | TL072 | single op. amp BI-FET | | | NS-TI |
| | IC..103 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | IC..104 | 50.09.0135 | NE5532 | dual op. amp. | | | Sig-Ex-Ra |
| | IC..105 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | IC..201 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | IC..202 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | IC..203 | 50.09.0101 | TL072 | dual op. amp. J-FET | | | NS-TI |
| | IC..204 | 50.09.0101 | TL072 | dual op. amp. J-FET | | | NS-TI |
| | IC..301 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | IC..302 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | IC..303 | 50.09.0107 | RC4559 | dual op. amp. | | | Ra+NSC |
| | JSP...1 | 54.01.0020 | 3 Pin | Jumper plug | | | |
| | MP....1 | 53.03.0166 | 12 pos | IC-Socket 8 pin | | | |
| | MP....2 | 54.01.0021 | 1 pos | Jumper | | | |
| | MP....3 | 59.20.2901 | 3 pos | clip 2+ TO 92 | | | |
| | MP....4 | 1.010.012.50 | 1 pos | LED-Holder | | | |
| | P.....1 | 54.01.0339 | 2x16 Pin | DIN Eurocconnector | | | Ru |
| | Q...101 | 50.03.0436 | BF 337 | PNP | | | any |
| | Q...201 | 1.010.038.50 | BC 560 | PNP selected | | | St |
| | Q...202 | 1.010.038.50 | BC 560 | PNP selected | | | St |
| | Q...203 | 1.010.038.50 | BC 560 | PNP selected | | | St |
| | Q...204 | 1.010.038.50 | BC 560 | PNP selected | | | St |
| | Q...301 | 1.010.038.50 | BC 560 | PNP selected | | | St |
| | Q...302 | 1.010.038.50 | BC 560 | PNP selected | | | St |
| | Q...401 | 50.03.0515 | BC 307 | PNP | | | any |
| | R.....1 | 57.92.1271 | 6.5 Ohm | I= 270mA | PTC | Philips Nr.2322 662 12711 | |
| | R.....2 | 57.92.1271 | 6.5 Ohm | I= 270mA | PTC | Philips Nr.2322 662 12711 | |
| | R.....3 | 57.92.1271 | 6.5 Ohm | I= 270mA | PTC | Philips Nr.2322 662 12711 | |
| | R...101 | 57.11.3152 | 1.5 kOhm | 1% 0.25W | | | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---|---|---|---|---|---|---|---|
| | R...102 | 57.11.3152 | 1.5 kOhm | 1% 0.25W | | | |
| | R...103 | 57.11.3392 | 3.9 kOhm | 1% 0.25W | | | |
| | R...104 | 57.11.3392 | 3.9 kOhm | 1% 0.25W | | | |
| | R...105 | 57.11.3272 | 2.7 kOhm | 1% 0.25W | | | |
| | R...106 | 57.11.3272 | 2.7 kOhm | 1% 0.25W | | | |
| | R...107 | 57.11.4101 | 100 Ohm | 5% 0.25W | | | |
| | R...108 | 57.11.4332 | 3.3 kOhm | 5% 0.25W | | | |
| | R...109 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...110 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...111 | 57.11.4333 | 33 kOhm | 5% 0.25W | | | |
| | R...112 | 57.11.3472 | 4.7 kOhm | 1% 0.25W | | | |
| | R...113 | 57.11.4684 | 680 kOhm | 5% 0.25W | | | |
| | R...114 | 57.11.3332 | 3.3 kOhm | 1% 0.25W | | | |
| | R...115 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...116 | 57.11.4333 | 33 kOhm | 5% 0.25W | | | |
| | R...117 | 57.11.4333 | 33 kOhm | 5% 0.25W | | | |
| | R...118 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...119 | 57.11.4102 | 1 kOhm | 5% 0.25W | | | |
| | R...120 | 57.11.4223 | 22 kOhm | 5% 0.25W | | | |
| | R...121 | 57.11.4391 | 390 Ohm | 5% 0.25W | | | |
| | R...122 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...123 | 57.11.3272 | 2.7 kOhm | 1% 0.25W | | | |
| | R...124 | 57.11.4474 | 470 kOhm | 2% 0.25W | | | |
| | R...125 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...126 | 57.11.3472 | 4.7 kOhm | 1% 0.25W | | | |
| | R...127 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...128 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...129 | 57.11.3472 | 4.7 kOhm | 1% 0.25W | | | |
| | R...130 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...131 | 57.11.4474 | 470 kOhm | 2% 0.25W | | | |
| | R...132 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...133 | 57.11.3272 | 2.7 kOhm | 1% 0.25W | | | |
| | R...134 | 57.11.3150 | 15 Ohm | 1% 0.25W | | | |
| | R...135 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...136 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...137 | 57.11.3150 | 15 Ohm | 1% 0.25W | | | |
| | R...138 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---|---|---|---|---|---|---|---|
| | R...139 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...140 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...141 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...142 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...143 | 57.11.3689 | 6.8 Ohm | 1% 0.25W | | | |
| | R...144 | 57.11.3689 | 6.8 Ohm | 1% 0.25W | | | |
| | R...145 | 57.11.3302 | 3 kOhm | 1% 0.25W | | | |
| | R...146 | 57.11.3562 | 5.6 kOhm | 1% 0.25W | | | |
| | R...147 | 57.11.3562 | 5.6 kOhm | 1% 0.25W | | | |
| | R...148 | 57.11.3272 | 2.7 kOhm | 1% 0.25W | | | |
| | R...149 | 57.11.3272 | 2.7 kOhm | 1% 0.25W | | | |
| | R...150 | 57.11.4101 | 100 Ohm | 5% 0.25W | | | |
| | R...201 | 57.11.4392 | 3.9 kOhm | 2% 0.25W | | | |
| | R...202 | 57.11.3103 | 10 kOhm | 1% 0.25W | | | |
| | R...203 | 57.11.3203 | 20 kOhm | 1% 0.25W | | | |
| | R...204 | 57.11.3103 | 10 kOhm | 1% 0.25W | | | |
| | R...205 | 57.11.3103 | 10 kOhm | 1% 0.25W | | | |
| | R...206 | 57.11.4192 | 1 kOhm | 2% 0.25W | | | |
| | R...207 | 57.11.3473 | 47 kOhm | 1% 0.25W | | | |
| | R...208 | 57.11.4563 | 56 kOhm | 2% 0.25W | | | |
| | R...209 | 57.11.4563 | 56 kOhm | 2% 0.25W | | | |
| | R...210 | 1.010.014.58 | 22 kOhm | 10% lin. | variable resistor | | St |
| | R...211 | 57.11.4824 | 820 kOhm | 2% 0.25W | | | |
| | R...212 | 57.11.3511 | 510 Ohm | 1% 0.25W | | | |
| | R...213 | 1.010.023.58 | 100 kOhm | 10% lin. | variable resistor | | St |
| | R...214 | 57.11.4102 | 1 kOhm | 5% 0.25W | | | |
| | R...215 | 57.11.3303 | 30 kOhm | 1% 0.25W | | | |
| | R...216 | 57.11.3911 | 910 Ohm | 1% 0.25W | | | |
| | R...217 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...218 | 57.11.4224 | 220 kOhm | 5% 0.25W | | | |
| | R...219 | 57.11.4474 | 470 kOhm | 5% 0.25W | | | |
| | R...220 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...221 | 57.11.4105 | 1 MOhm | 5% 0.25W | | | |
| | R...222 | 57.11.4122 | 1.2 kOhm | 5% 0.25W | | | |
| | R...223 | 57.11.4333 | 33 kOhm | 5% 0.25W | | | |
| | R...224 | 57.11.4821 | 820 Ohm | 2% 0.25W | | | |
| | R...225 | 57.11.3513 | 51 kOhm | 1% 0.25W | | | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---|---|---|---|---|---|---|---|
| | R...226 | 57.11.3513 | 51 kOhm | 1% 0.25W | | | |
| | R...227 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...228 | | 100 kOhm | 10% lin. | part of R 213 | | |
| | R...229 | 57.11.4473 | 47 kOhm | 2% 0.25W | | | |
| | R...230 | 1.010.014.58 | 22 kOhm | 10% lin. | variable resistor | | St |
| | R...231 | 57.11.4334 | 330 kOhm | 2% 0.25W | | | |
| | R...232 | 57.11.4182 | 1.8 kOhm | 2% 0.25W | | | |
| | R...233 | 57.11.4104 | 100 kOhm | 2% 0.25W | | | |
| | R...234 | 57.11.4104 | 100 kOhm | 2% 0.25W | | | |
| | R...235 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...301 | 57.11.4183 | 18 kOhm | 5% 0.25W | | | |
| | R...302 | 57.11.4104 | 100 kOhm | 5% 0.25W | | | |
| | R...303 | 57.11.4823 | 8.2 kOhm | 5% 0.25W | | | |
| | R...304 | 57.11.3103 | 10 kOhm | 1% 0.25W | | | |
| | R...305 | 57.11.3203 | 20 kOhm | 1% 0.25W | | | |
| | R...306 | 57.11.3562 | 5.6 kOhm | 1% 0.25W | | | |
| | R...307 | 57.11.3562 | 5.6 kOhm | 1% 0.25W | | | |
| | R...308 | 57.11.4103 | 10 kOhm | 2% 0.25W | | | |
| | R...309 | 57.11.4223 | 22 kOhm | 5% 0.25W | | | |
| | R...310 | 1.010.023.58 | 100 kOhm | 10% lin. | variable resistor | | St |
| | R...311 | 57.11.4334 | 330 kOhm | 5% 0.25W | | | |
| | R...312 | 57.11.4154 | 150 kOhm | 5% 0.25W | | | |
| | R...313 | 57.11.4222 | 2.2 kOhm | 5% 0.25W | | | |
| | R...314 | 57.11.5275 | 2.7 MOhm | 5% 0.25W | | | |
| | R...315 | 57.11.4223 | 22 kOhm | 2% 0.25W | | | |
| | R...316 | 57.11.4152 | 1.5 kOhm | 2% 0.25W | | | |
| | R...317 | 57.11.4104 | 100 kOhm | 5% 0.25W | | | |
| | R...318 | 57.12.3162 | 1.6 kOhm | 1% 0.25W | | | |
| | R...319 | 57.12.4182 | 1.8 kOhm | 5% 0.25W | | | |
| | R... 320 | 1.010.014.58 | 22 kOhm | 10% lin. | variable resistor | | St |
| | R...321 | 57.11.4103 | 10 kOhm | 2% 0.25W | | | |
| | R...322 | 57.11.4103 | 10 kOhm | 2% 0.25W | | | |
| | R...323 | 57.11.4103 | 10 kOhm | 2% 0.25W | | | |
| | R...324 | 57.12.4153 | 15 kOhm | 2% 0.25W | | | |
| | R...325 | | 100 kOhm | 10% lin. | part of R 310 | | |
| | R...326 | 57.11.4104 | 100 kOhm | 2% 0.25W | | | |
| | R...327 | 57.11.4124 | 120 kOhm | 2% 0.25W | | | |



| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | | | MANUF. |
|---|---|---|---|---|---|---|---|
| | R...328 | 57.11.4103 | 10 kOhm | 5% 0.25W | | | |
| | R...401 | 57.11.4473 | 47 kOhm | 2% 0.25W | | | |
| | R...402 | 57.11.4104 | 100 kOhm | 2% 0.25W | | | |
| | R...403 | 57.11.4104 | 100 kOhm | 2% 0.25W | | | |
| | R...404 | 57.11.4474 | 470 kOhm | 2% 0.25W | | | |
| | R...405 | 57.11.5335 | 3.3 MOhm | 5% 0.25W | | | |
| | R...406 | 57.11.4104 | 100 kOhm | 2% 0.25W | | | |
| | R...407 | 57.11.4101 | 100 Ohm | 5% 0.25W | | | |
| | R...408 | 57.11.4473 | 47 kOhm | 2% 0.25W | | | |
| | R...409 | 57.11.5335 | 3.3 MOhm | 5% 0.25W | | | |
| | R...410 | 1.010.014.58 | 22 kOhm | 10% lin. | variable resistor | | St |
| | R...411 | 58.01.8104 | 100 kOhm | 10% | variable resistor | PKG | |

(02) 89/01/13 A1 VCA 1.010.110.50 replaced by 1.911.290.00

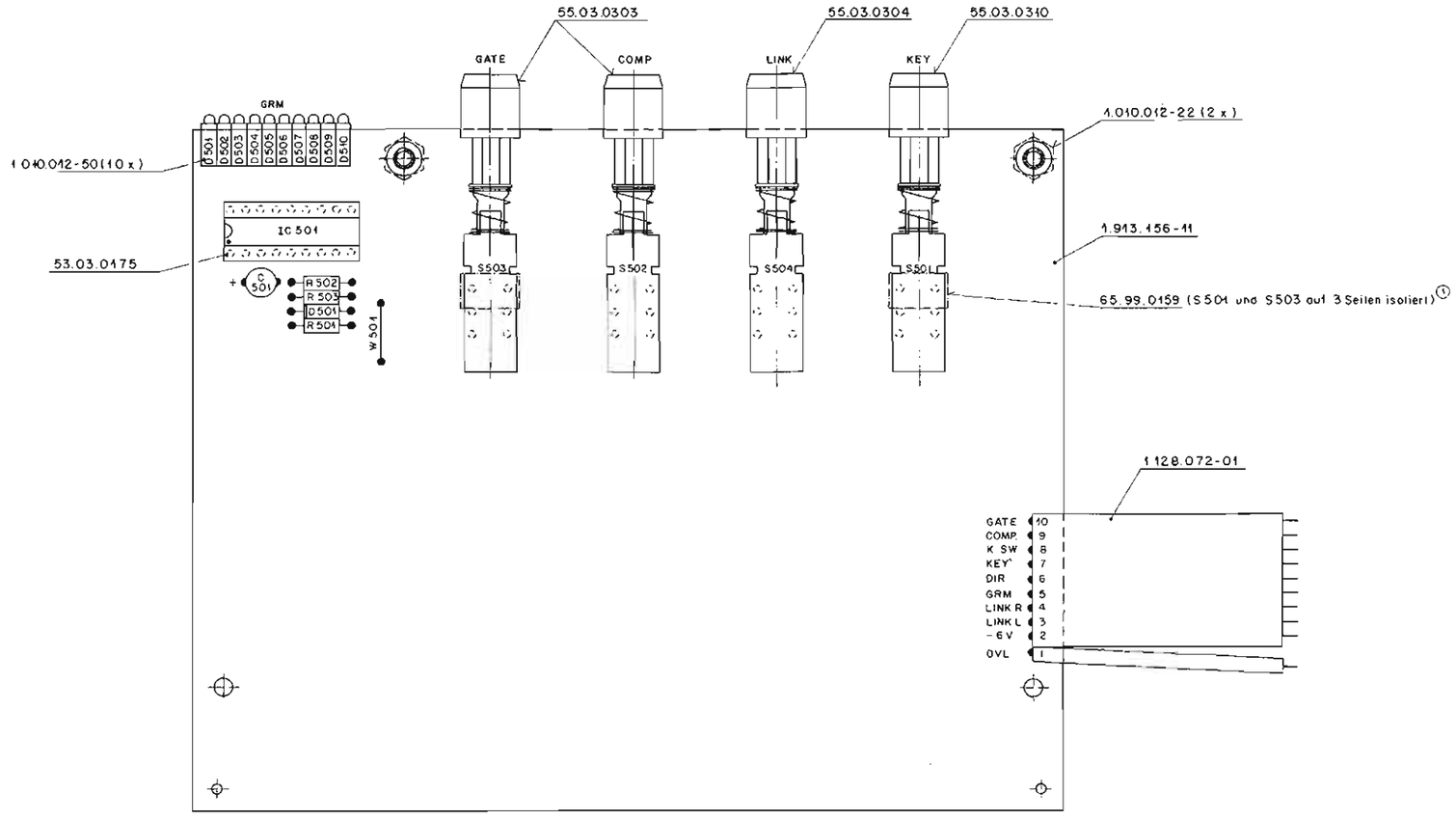
(03) 90/01/17 A1 VCA 1.911.290.00 replaced by 1.911.290.81

CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Poly-tyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instruments
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=
(Heiwa)Nitsi, NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Six=Siliconix, St=Studer,
TI=Texas Instruments

ORIG 87.02.26 (02) 89/01/13 (03) 90/01/17

## Compressor Switch Board 1.913.156




| IND. | POS.NO. | PART NO. | VALUE | SPECIFICATIONS / EQUIVALENT | MANUF. |
|---|---|---|---|---|---|
| | C...501 | 59.22.3101 | 100 uF | 6V EL | |
| | D...501 | 50.04.0127 | BAT 42 | Shottky | |
| | DL..501 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..502 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..503 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..504 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..505 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..506 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..507 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..508 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..509 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | DL..510 | 50.04.2121 | CQY41AN | LED red | TFK/HP |
| | IC..501 | 50.11.0119 | LM3914 | Bargraph Driver | NS |
| | XP....1 | 55.03.0175 | 1 pcs | IC-Socket 18 Pin | |
| | XP....2 | 1.010.012.50 | 10 pcs | LED-Holder | |
| | XP....9 | 1.128.072.01 | 2 pcs | Ribbon-Wire | |
| | R...501 | 57.11.4104 | 100 kOhm | 5% 0.25W | |
| | R...502 | 57.11.4272 | 2.7 kOhm | 5% 0.25W | |
| | R...503 | 57.11.4562 | 5.6 kOhm | 5% 0.25W | |
| | S...501 | 55.15.0002 | 2xU | Push-Button | ITT |
| | S...502 | 55.15.0002 | 2xU | Push-Button | ITT |
| | S...503 | 55.15.0002 | 2xU | Push-Button | ITT |
| | S...504 | 55.15.0002 | 2xU | Push-Button | ITT |
| | W...501 | | | | |

STUDER (00) 86.06.20 WN COMPRESSOR SWITCH BOARD PL 1.913.156.00 PAGE 1

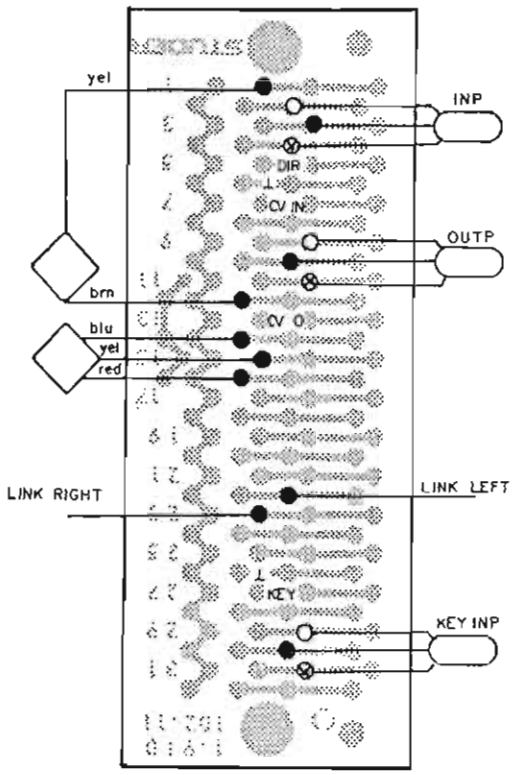
CE=Ceramic, CF=Carbon Film, EL=Electrolytic, MF=Metal Film,
PE=Polyester, PP=Polypropylen, PS=Polystyrol

MANUFACTURER: Bu=Burndy, Ex=Exar, Fc=Fairchild, GI=General Instrument
HP=Hewlett Packard, ITT=Intermetall, Mot=Motorola, Nat=National
(Matsushita), NS=National Semiconductors, Ph=Philips,
Ra=Raytheon, Sig=Signetics, Siv=Siliconix, St=Studer,
TI=Texas Instrument

DRIG 86.06.20

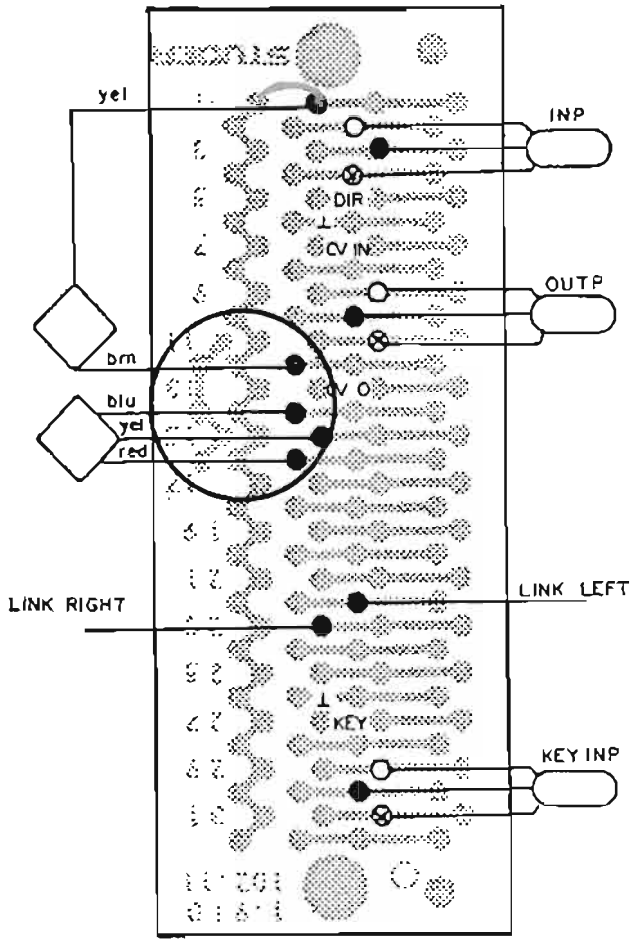
STUDER (00) 86.06.20 WN COMPRESSOR SWITCH BOARD PL 1.913.156.00 PAGE 2

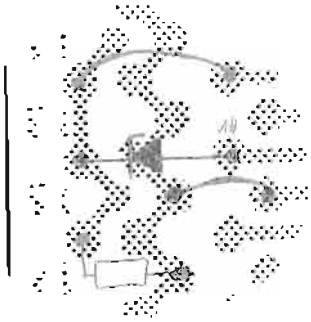
LIM./COMPR./NOISE G.
1.913.155




P

LIM/COMPR./NOISE G.
1.913.155



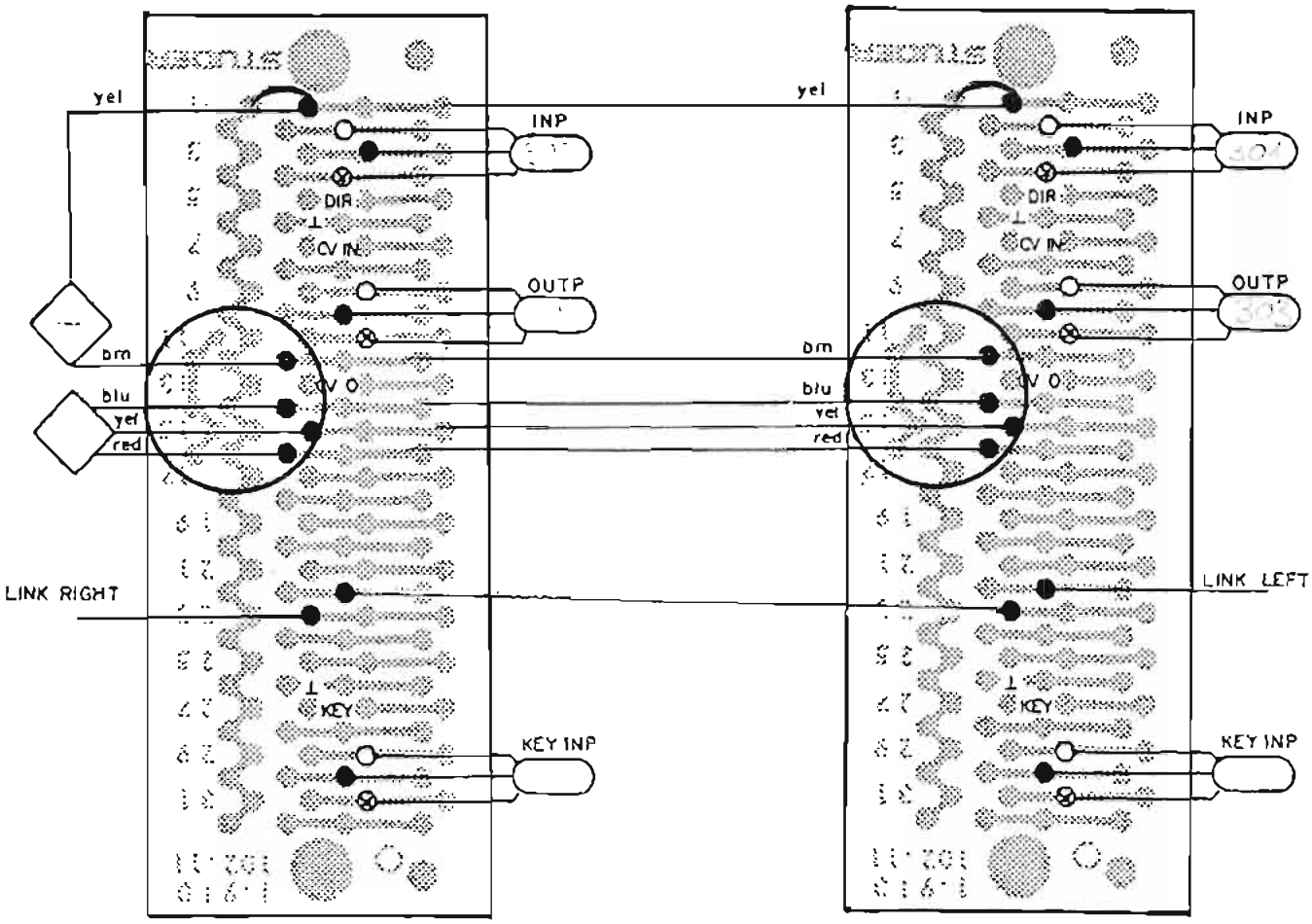



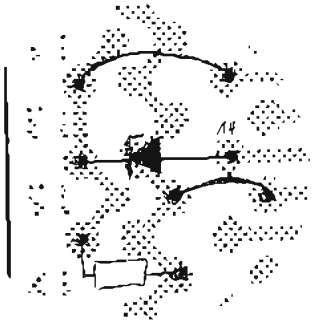
R = 1k2 Ω
ZD = 8V1 1.3W

| | | | | |
|---|---|---|---|---|
| 08.02.93 Zd | | | | |
| | Print 1 510.102.11 | | | PAGE OF |
| STUDER | Limiter Compressor | | | |

LIM./COMPR./NOISE G.
1.913.155

LIM./COMPR./NOISE G.
1.913.155



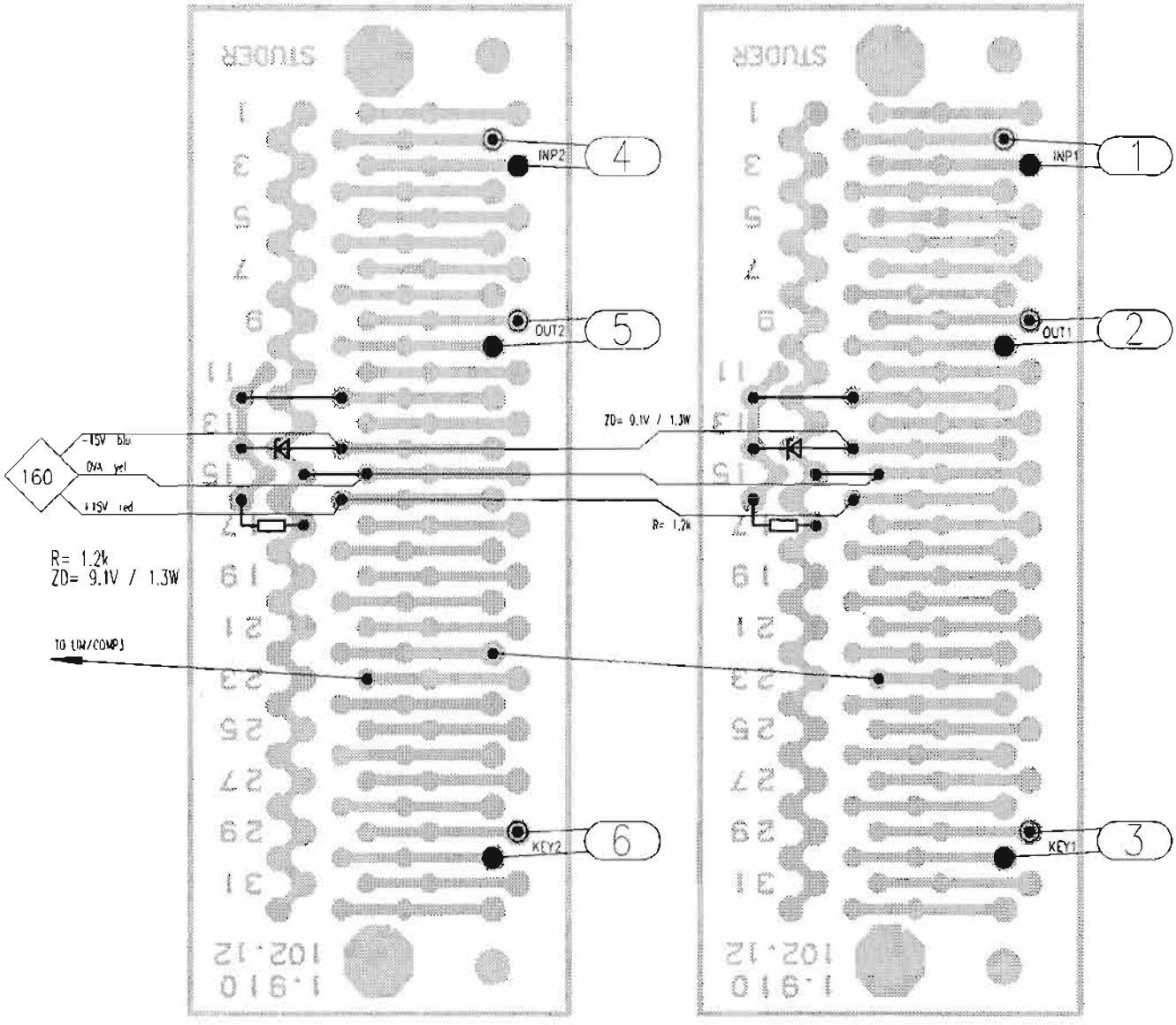
R = 1k2 Ω

ZD = 9V1 1,3W

| | | | | |
|---|---|---|---|---|
| 0 . . | . . | . . | . . | . . |
| | Print 1 910. 102. 11 | | | PAGE OF |
| STUDER | Limiter Compressor | | | |

LIMITER / COMPRESSOR 2

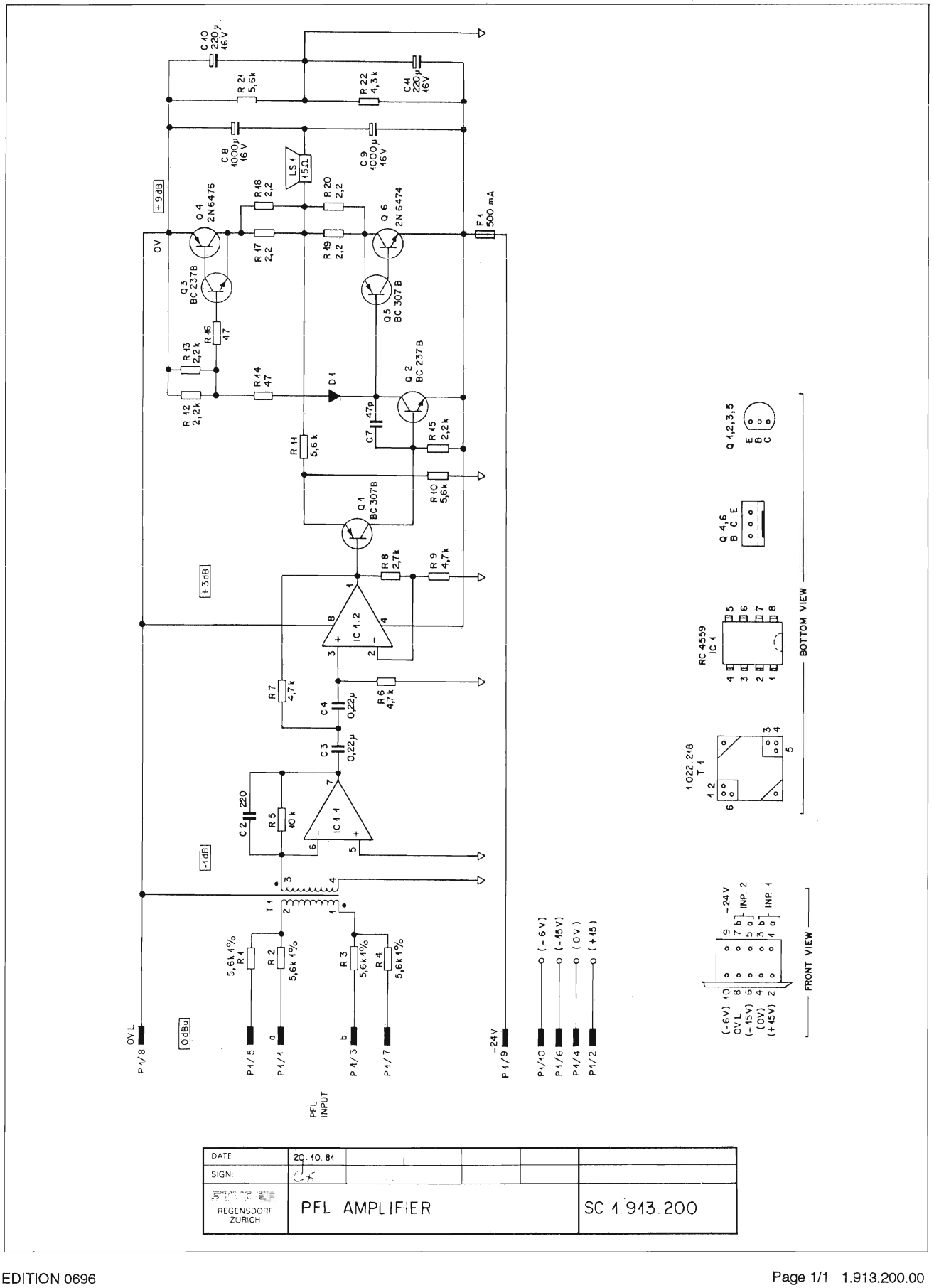
LIMITER / COMPRESSOR 1




P:\ACAD\Busboards\BOARDS\910\91010212lc_w.dwg

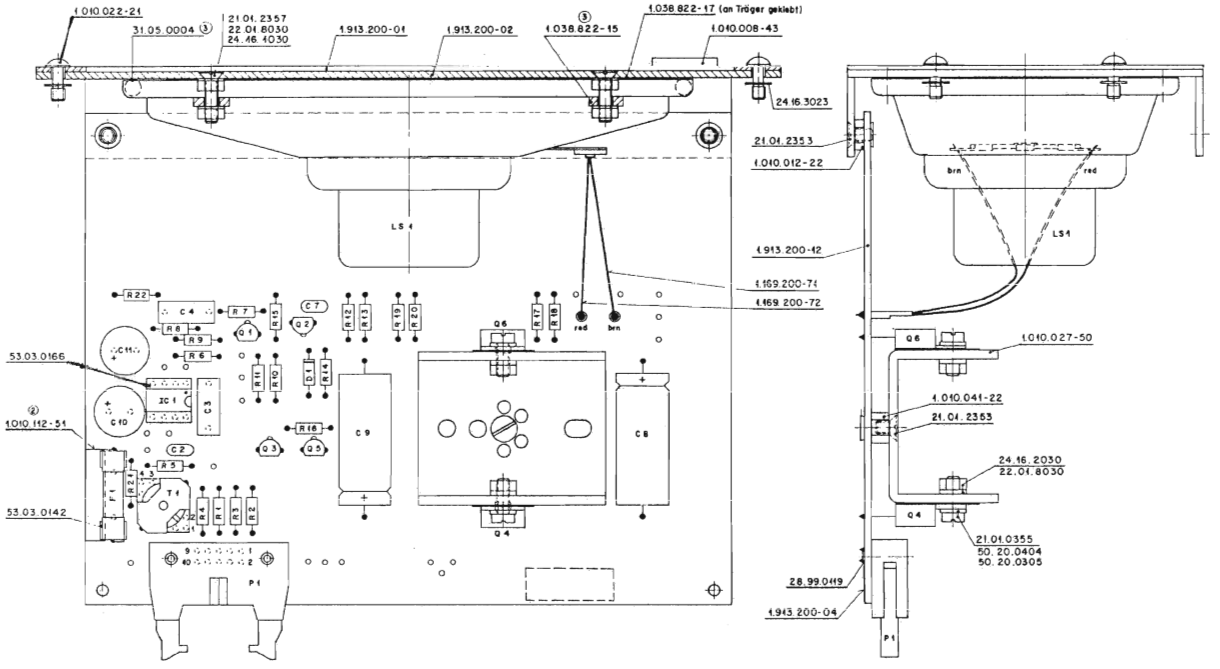
| | | | | |
|---|---|---|---|---|
| 0 07.06.00 / GY | | | | |
| 91010212lc_w | MUSTER | | | Page 1 of 1 |
| STUDER REGENSDORF SWITZERLAND | LIMITER / COMPRESSOR | | | MUSTER |

## PFL AMPLIFIER 1.913.200.00




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DATE | 20.10.81 | | | | | | |
| SIGN | | | | | | | |
| REGENSDORF ZURICH | PFL AMPLIFIER | | | | | | SC 1.913.200 |

## PFL AMPLIFIER 1.913.200.00




| | | | | | |
|---|---|---|---|---|---|
| Werkstoff | Norm-Nr. | Oberflächen | Gute | Änderung | 1.6.85 A.Ho. ③ |
| | Dim. Bez. | | Beh. | | 6.11.84 A.Ho. ② |
| | Abmessung | | | | 4.1.84 A.Ho. ① |
| Zugehörige Unterlagen | | Fremdtoleranz | Maßstab | Ausgabe | 29.11.82 A.Ho. ⓪ |
| PL | | ± | 2:1 | Datum / Gez. / Gepr. / Ges. / Index | |
| Ersatz für: | | Ersetzt durch: | | Kopie für: | |
| STUDER REGENSDORF ZÜRICH | | Benennung | PFL- Amplifier | Nummer | 1.913.200-00 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | | MFR |
|---|---|---|---|---|---|---|
| | C 1 | | | | | |
| | C 2 | 59.34.4221 | 220pF | | CER | |
| | C 3 | 59.12.2224 | 0,22µF | 5% | PE | |
| | C 4 | 59.12.2224 | 0,22µF | 5% | PE | |
| | C 5 | | | | | |
| | C 6 | | | | | |
| | C 7 | 59.34.2470 | 47pF | | CER | |
| | C 8 | 59.25.3102 | 1000µF | 16V | EL | |
| | C 9 | 59.25.3102 | 1000µF | 16V | EL | |
| | C 10 | 59.22.4221 | 220µF | 16V | EL | |
| ④ | C 11 | 59.22.4221 | 220µF | 16V | EL | |
| | D 1 | 50.04.0125 | 1N4448 | | SI | |
| | F 1 | 51.04.0114 | 500mA | SB | | |
| | IC 1 | 50.09.0101 | RC4558 | DUAL | OPA | Ra. |
| | LS 1 | 71.01.0103 | 15 Ω | 3W | | Ph |
| | Q 1 | 50.03.0515 | BC 307B | PNP | LF all purpose | SI any |
| | Q 2 | 50.03.0436 | BC 239B | NPN | LF all purpose | SI any |
| | Q 3 | 50.03.0436 | BC 239B | NPN | LF all purpose | SI any |
| | Q 4 | 50.03.0345 | 2NE476 | PNP | Power TO220 | SI R |
| | Q 5 | 50.03.0515 | BC307B | PNP | LF all purpose | SI any |
| | Q 6 | 50.03.0344 | 2N6474 | NPN | Power TO220 | R |
| | R 1 | 57.11.3562 | 5,6k | 1% | | |
| | R 2 | 57.11.3562 | 5,6k | 1% | | |
| | R 3 | 57.11.3562 | 5,6k | 1% | | |
| | R 4 | 57.11.3562 | 5,6k | 1% | | |
| | R 5 | 57.11.4103 | 10k | | | |
| | R 6 | 57.11.4472 | 4,7k | 2% | | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | CER - Ceramic Ph - Philips |
| ③ | | | PE - Polyester R - RCA |
| ② | | | EL - Electrolytic R - Raytheon |
| ① | 6.11.84 | dri | |
| ○ | 14.8.81 | Ch. | |

STUDER | PFL - AMPLIFIER | 1.913.200.00 | PAGE 1 OF 2

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R 7 | 57.11.4472 | 4,7k | 2% | |
| | R 8 | 57.11.4272 | 2,7k | 2% | |
| | R 9 | 57.11.4472 | 4,7k | 2% | |
| | R 10 | 57.11.3562 | 5,6k | | |
| | R 11 | 57.11.3562 | 5,6k | | |
| | R 12 | 57.11.4272 | 2,7k | | |
| | R 13 | 57.11.4222 | 2,2k | | |
| | R 14 | 57.11.4470 | 47 | | |
| | R 15 | 57.11.4223 | 22k | | |
| | R 16 | 57.11.4470 | 47 | | |
| | R 17 | 57.11.4229 | 2,2 | | |
| | R 18 | 57.11.4229 | 2,2 | | |
| | R 19 | 57.11.4229 | 2,2 | | |
| | R 20 | 57.11.4229 | 2,2 | | |
| | R 21 | 57.11.3562 | 5,6k | 1% | |
| | R 22 | 57.11.3432 | 4,3k | 1% | |
| | T 1 | 1.022.218 | 1:1 | Input Trafo | ST |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | ST- STUDER |
| ③ | | | |
| ② | | | |
| ① | | | |
| ○ | 14.8.81 | dri | |

STUDER | PFL AMPLIFIER | 1.913.200.00 | PAGE 2 OF 2

## KORRELATOR

Der Korrelator zeigt die Phasenkorrelation einer Stereoaufnahme an.

Die Phasenkorrelation ist die gegenseitige Beziehung der Phasen beider Kanäle.

Wenn die Signale beider Kanäle gleichphasig sind, z.B. bei Monoaufnahmen, zeigt das Korrelationsinstrument +1 an; wenn sie gegenphasig ($\pm$ 180°) sind, zeigt das Instrument -1 an. Bei einem Stereoprogramm wird ein Mittelwert von gleich- und gegenphasigen Signalen angezeigt.

Stereoprogramme weisen normalerweise einen positiven Korrelationswert auf, vorzugsweise um + 0,5. Negative Werte zeigen eine Phasenvertauschung im System an.

### ANWENDUNGEN, DIE EINEN KORRELATOR ERFORDERN:

#### Monokompatibilität von Stereoprogrammen

Damit eine stereophone Aufnahme auch monophon abgehört werden kann, muss die Korrelation überwacht werden.

Gegenphasige Anteile führen zu partiellen Auslöschungen.

#### Tiefe Frequenzen auf Stereo-Schallplatten

Die Abtastfähigkeit eines Abtastsystems ist für vertikale Auslenkung viel geringer als für horizontale Auslenkung.

Gegenphasige Signale mit hohem Pegel und tiefen Frequenzen weisen eine grosse vertikale Auslenkung auf und müssen deshalb vermieden werden.

#### Modulation von FM-Stereosendern

Die FM-Strecke Sender-Empfänger ist sehr empfindlich auf übermässig hohe Frequenzdifferenz-Signale. Es entstehen dabei unzulässige Verzerrungen.

## CORRELATOR

The correlator indicates the phase correlation of a stereo program.

The phase correlation is the mutual relation of the phases on both channels.

If the signals of both channels are in phase, e.g. in a mono production, the correlation instrument indicates +1, if they are phased inversely ($\pm$180 ), the instrument indicates -1. The correlator always indicates the average of in-phase and antiphase signals of a stereo production.

Stereo programs normally show a positive correlation value, preferably around +0.5. Negative values indicate that the phase in the system is inversed.

### APPLICATION WHICH REQUIRE A CORRELATOR

#### Mono compatibility of stereo programs

To ensure that a stereo recording can also be reproduced in mono mode it is necessary to monitor the correlation.

No phased-inversed components are allowed because they partially cancel during monophonic reproduction.

#### Low frequencies on stereo records

The tracking capability of a cartridge is much lower for vertical excursion than for horizontal excursion.

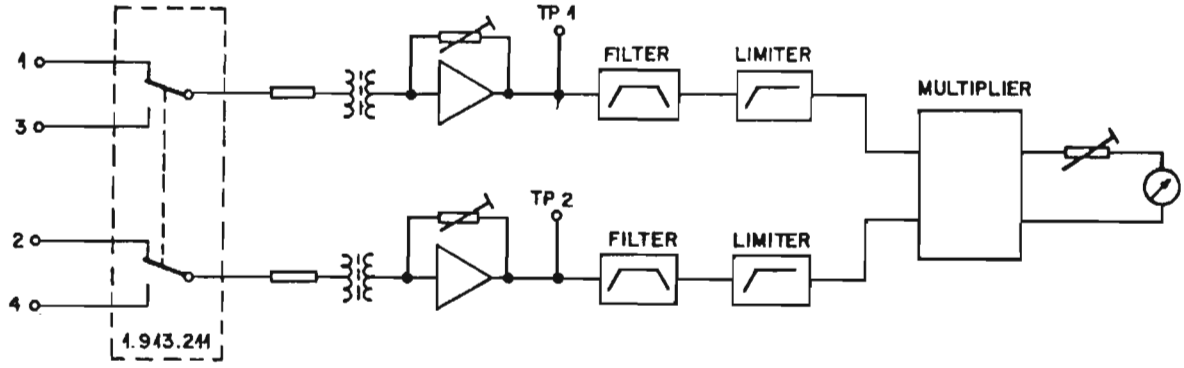
Antiphase signals with high levels and low frequencies result in high vertical excursion and should, therefore, be avoided.

#### Modulation from FM stereo transmitters

The FM path from the transmitter to the receiver is very sensitive to excessively high frequency-difference signals. They produce inacceptable distortion.

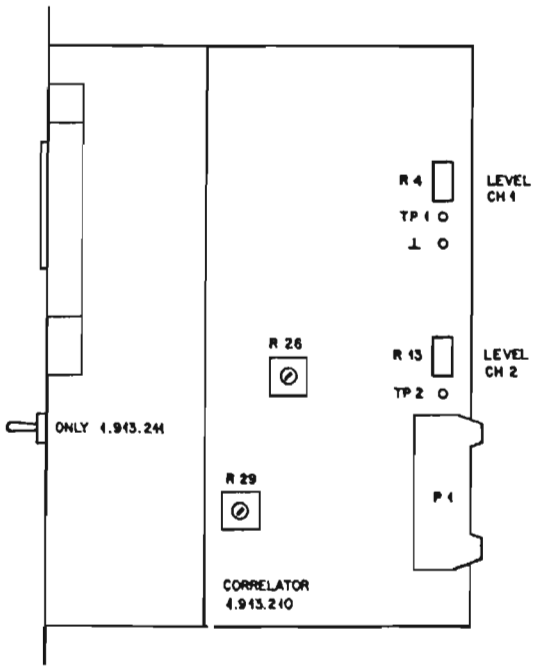
Blockschaltbild

Block Diagram




Abgleich

Calibration




1. An beiden Eingängen wird ein gleichphasiges 1 kHz-Signal mit Leitungspegel eingespiesen.

   R4 bzw. R13 so einstellen, dass an den Messpunkten TP1 bzw. TP2 ein Pegel von 100 mV AC gegen ⊥ (Masse) erscheint.

2. Eingangspegel um 50 dB verringern. KO an den Ausgang 6 oder 9 von IC3 gegen Masse ⊥ anschliessen. Die Amplituden beider Halbwellen mit R29 auf gleiche Höhe einstellen.

3. Eingangspegel wieder auf Leitungspegel einstellen. Mit R26 den Zeiger des Anzeigeinstrumentes auf +1 einstellen.

4. Einen der beiden Eingänge umpolen. Das Messinstrument soll -1 anzeigen.

5. Anzeigen gemäss Fig A kontrollieren.

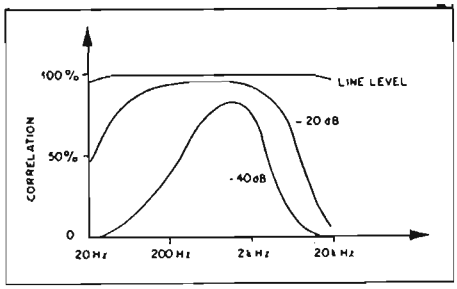
1. Feed both inputs with an in-phase signal (1 kHz, line level).
   Adjust R4 and R13 in such a manner that 100 mV AC appear at both test points TP1 or TP2, against ground.

2. Reduce the input level by 50 dB. Connect oscilloscope to pin 6 or 9 of IC3 to ground. With R29 adjust the amplitudes of both half-waves to equal height.

3. Restore input level to line level. With R26 adjust the pointer of the meter to +1.

4. Reverse the polarity of one of the inputs. The meter should indicate -1.

5. Check meter readings according to Fig. A.




| EINGANG | 30 Hz | 1 kHz | 15 kHz |
|---|---|---|---|
| Leitungspegel = A | 0,95 | 1 | 0,95 |
| A + 20 dB | ~1 | 1 | ~1 |
| A - 20 dB | 0,6 | ~1 | 0,5 |

| INPUT | 30 Hz | 1 kHz | 15 kHz |
|---|---|---|---|
| Line level = A | 0,95 | 1 | 0,95 |
| A + 20 dB | ~1 | 1 | ~1 |
| A - 20 dB | 0,6 | ~1 | 0,5 |

TECHNISCHE DATEN

Eingang

symmetrisch und erdfrei
Eingangsimpedanz 20 Hz ... 20 kHz: >10 kOhm
Eingangspegel, einstellbar: +6 ... +15 dBu

Filter

Hochpass 6 dB/Oktave: $f_u$. ca. 340 Hz
Tiefpass 12 dB/Oktave: $f_o$. ca. 3,4 kHz

Ausgang

Ausgangstrom für Instrumente, einstellbar ± 300 µA

Temperatureinfluss

Fehler bei 0° C ... 50° C, bezüglich Raumtemperatur: +3 ... -1 %

Stromaufnahme bei ± 15 V: ca. 15 mA

Mechanische Daten

| | |
|---|---|
| Frontplatte dunkelgrau gespritzt | |
| Abmessung Frontplatte | 170 x 180 mm |
| Tiefe | 135 mm |
| Gewicht | 390 gr |

SPECIFICATIONS

Input

Balanced and floating
Input impedance 20 Hz ... 20 kHz: 10 kOhm
Input level, variable: + 6 ... + 15 dBu

Filter

High-pass 6 dB/octave: $f_l$ approx. 340 Hz
Low-pass 12 dB/octave: $f_u$. approx. 3.4 kHz

Output

Output current for instruments, variable ± 300 uA.

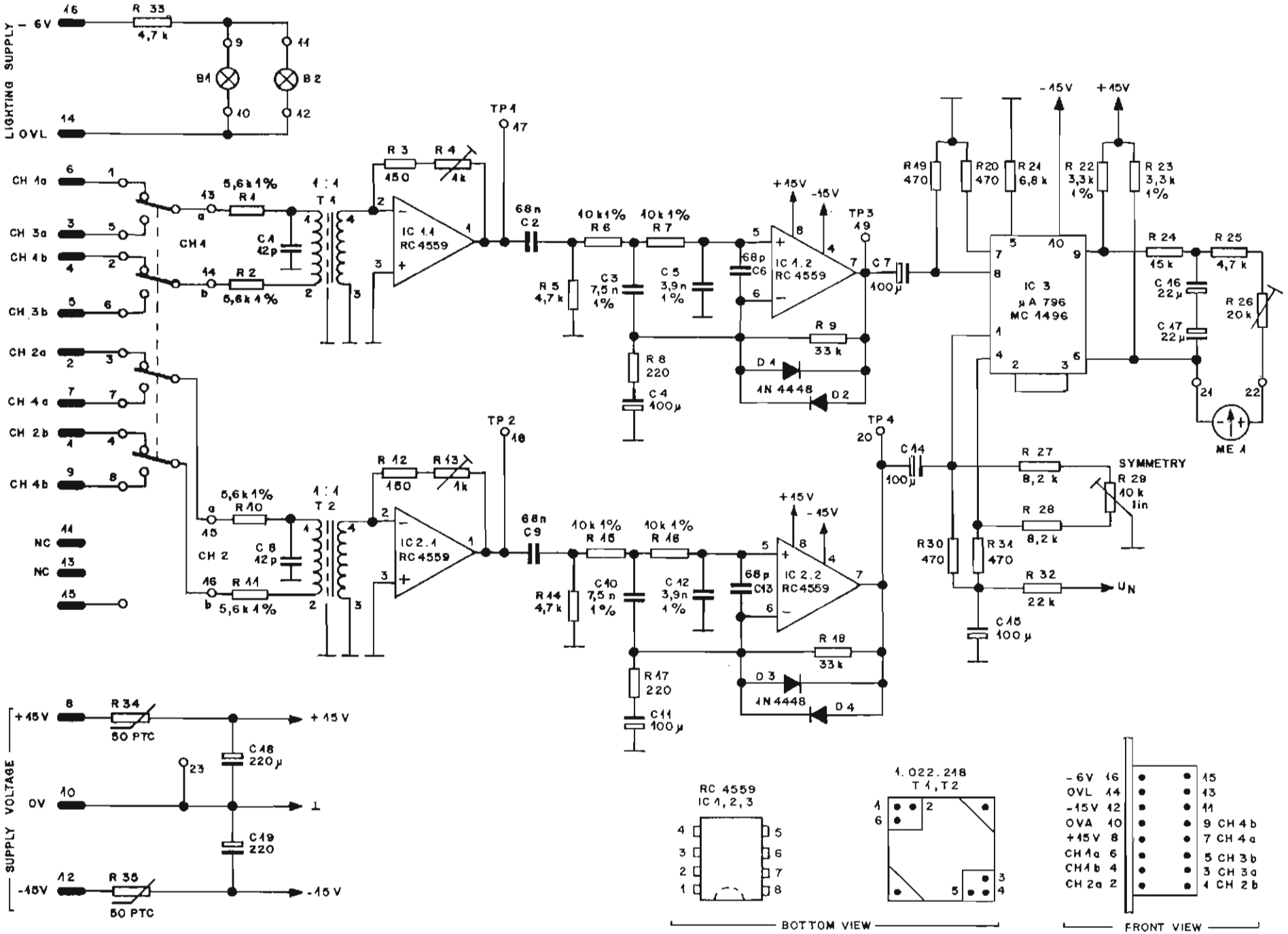
Influence of temperature

Error at 0 C ... 50 C, relative to room temperature: + 3 ... - 1 %.

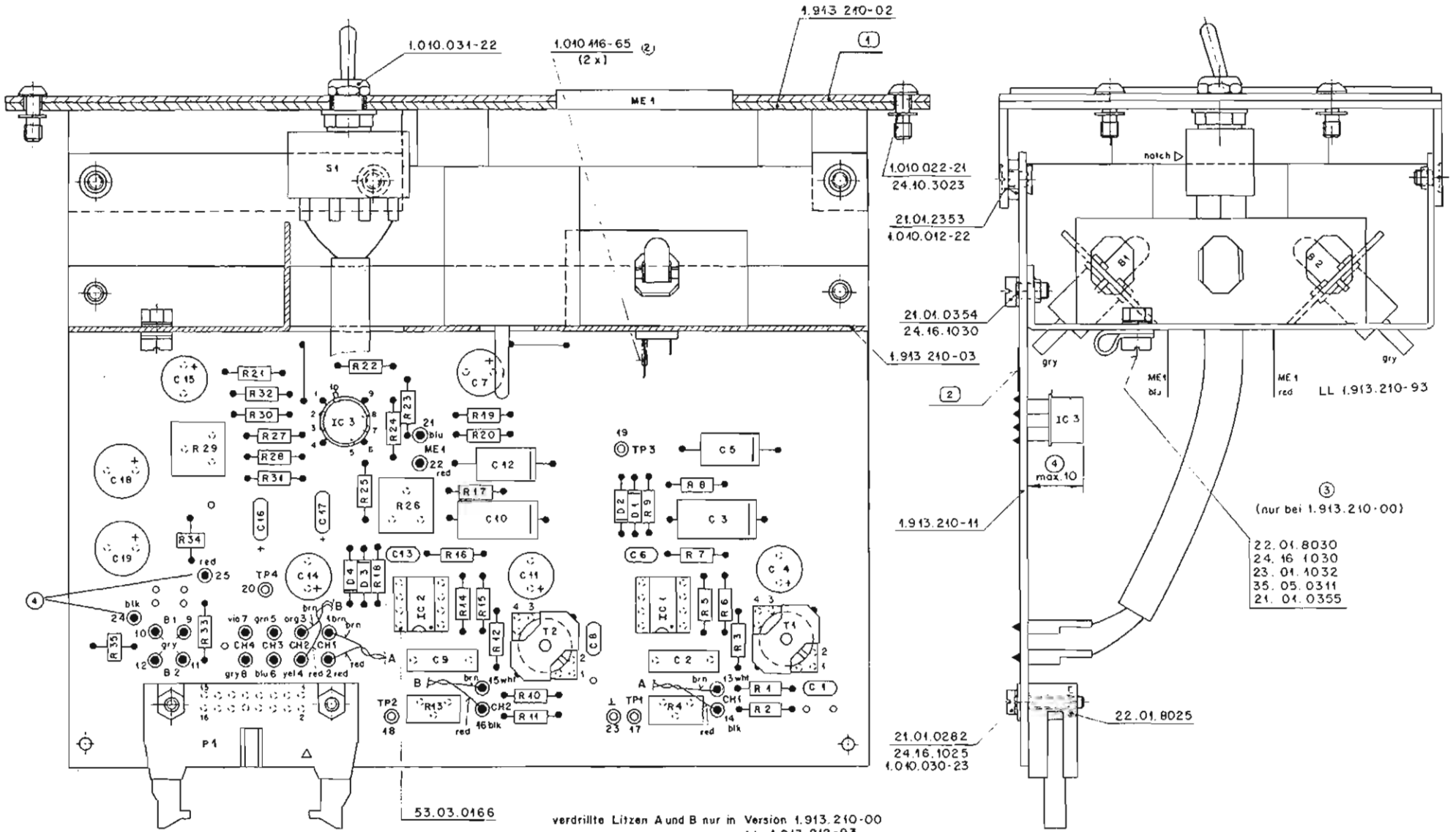
Connected load at ± 15 V: approx. 15 mA

Physical data

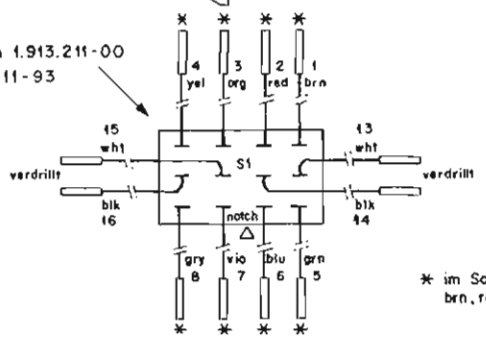
| | |
|---|---|
| Front panel laquered charcoal grey | |
| Dimensions of front panel | 170 x 180 mm |
| Depth | 135 mm |
| Weight | 390 g |




| | | | | | | |
|---|---|---|---|---|---|---|
| DATE: | 10.10.82 | | | | | |
| SIGN | | | | | | |
| REGENSDORF ZURICH | CORRELATOR 2CH/4CH | | | | | SC 1.913.210/211 |




nur in Version 1.913.211-00
LL 1.913.211-93




| | Gilt für : | (1) | (2) |
|---|---|---|---|
| 2 CH | 1.913.210-00 | 1.913.210-01 | 1.913.210-04 |
| 4 CH | 1.913.211-00 | 1.913.211-01 | 1.913.211-04 |

* im Schlauch 65.03.0146 :
brn, red, org, yel, grn, blu, vio, gry

| | | | | |
|---|---|---|---|---|
| Werkstoff: Norm-Nr. / DIN-Bez. / Abmessung: | Oberfläche: Güte / Beh. | | Änderung | 30.11.88 ④<br>12.11.86 A.Ho ③<br>10.12.84 A.Ho ②<br>4.1.84 A.Ho ① |
| Zugehörige Unterlagen: PL | Freimasstoleranz: - | Maßstab: 2:1 | Ausgabe | 9.2.83 A.Ho ⓪ |
| Ersatz für: | Ersetzt durch: | | Datum / Gez. / Gepr. / Ges. / Index | Kopie für: |
| STUDER REGENSDORF ZÜRICH | Benennung: CORRELATOR 2 CH / 4 CH | | | Nummer: 1.913.210-00 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | C1 | 59.34.4120 | 12pF | 5% | |
| | C2 | 59.02.5683 | 68nF | 5% | |
| | C3 | 59.12.7752 | 7,5nF | 1% | |
| | C4 | 59.22.5101 | 100µF | 16V | |
| | C5 | 59.12.7392 | 3,9nF | 1% | |
| | C6 | 59.34.4680 | 68pF | 5% | |
| | C7 | 59.22.5101 | 100µF | 16V | |
| | C8 | 59.34.4120 | 12pF | 5% | |
| | C9 | 59.02.5683 | 68nF | 5% | |
| | C10 | 59.12.7752 | 7,5nF | 1% | |
| | C11 | 59.22.5101 | 100µF | 16V | |
| | C12 | 59.12.7392 | 3,9nF | 1% | |
| | C13 | 59.34.4680 | 68pF | 5% | |
| | C14 | 59.22.5101 | 100µF | 16V | |
| | C15 | 59.22.5101 | 100µF | 16V | |
| | C16 | 59.26.4220 | 22µF | 10V | |
| | C17 | 59.26.4220 | 22µF | 10V | |
| | C18 | 59.22.4221 | 220µF | 16V | |
| | C19 | 59.22.4221 | 220µF | 16V | |
| | D1 | 50.04.0125 | 1N4448 | | |
| | D2 | 50.04.0125 | 1N4448 | | |
| | D3 | 50.04.0125 | 1N4448 | | |
| | D4 | 50.04.0125 | 1N4448 | | |
| | IC1 | 50.09.0107 | 4559 | | Ra,TI |
| | IC2 | 50.09.0107 | 4559 | | |
| | IC3 | 50.05.0122 | MC1496G | µA796 HC | M, F |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | F Fairchild TI Texas Instruments |
| ③ | | | M Motorola |
| ② | | | Ra Raytheon |
| ① | | | also valid for correlator 4CH 1.913.211 |
| ○ | 20-8-81 | ny | |



| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R1 | 57.11.3562 | 5,6k | 1% | |
| | R2 | 57.11.3562 | 5,6k | 1% | |
| | R3 | 57.11.4151 | 150 | | |
| | R4 | 58.01.7102 | 1k | TRIM-POTM. | |
| | R5 | 57.11.4472 | 4,7k | | |
| | R6 | 57.11.3103 | 10k | 1% | |
| | R7 | 57.11.3103 | 10k | 1% | |
| | R8 | 57.11.4221 | 220 | | |
| | R9 | 57.11.4333 | 33k | | |
| | R10 | 57.11.3562 | 5,6k | 1% | |
| | R11 | 57.11.3562 | 5,6k | 1% | |
| | R12 | 57.11.4151 | 150 | | |
| | R13 | 58.01.7102 | 1k | TRIM-POTM. | |
| | R14 | 57.11.4472 | 4,7k | | |
| | R15 | 57.11.3103 | 10k | 1% | |
| | R16 | 57.11.3103 | 10k | 1% | |
| | R17 | 57.11.4221 | 220 | | |
| | R18 | 57.11.4333 | 33k | | |
| | R19 | 57.11.4471 | 470 | | |
| | R20 | 57.11.4471 | 470 | | |
| | R21 | 57.11.4682 | 6,8k | | |
| | R22 | 57.11.3332 | 3,3k | 1% | |
| | R23 | 57.11.3332 | 3,3k | 1% | |
| | R24 | 57.11.4153 | 15k | | |
| | R25 | 57.11.4472 | 4,7k | | |
| | R26 | 58.01.8203 | 20k | TRIM-POTM. | |
| | R27 | 57.11.4822 | 8,2k | | |
| | R28 | 57.11.4822 | 8,2k | | |
| | R29 | 58.01.8103 | 10k | TRIM-POTM. | |
| | R30 | 57.11.4471 | 470 | | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | | | also valid for correlator 4CH 1.913.211 |
| ○ | 20-8-81 | ny | |



| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R31 | 57.11.4471 | 470 | | |
| | R32 | 57.11.4223 | 22k | | |
| | R33 | 57.11.4479 | 4,7 | | |
| | R34 | 57.99.0206 | 50 | PTC | |
| | R35 | 57.99.0206 | 50 | PTC | |
| | S1 | 55.01.0115 | 4x ON-ON | only 1.913.211 | |
| | T1 | 1.022.218 | 1:1 | INPUT TRAFO | STUDER |
| | T2 | 1.022.218 | 1:1 | INPUT TRAFO | STUDER |
| | B1 | 54.02.0144 | 6V, 30mA | Lamp | |
| | B2 | 54.02.0144 | 6V, 30mA | Lamp | |
| | ME1 | 1.913.001.03 | | Corr.-Meter | |
| | P1 | 54.14.2012 | | Connector, 16 pins | |
| | XIC | 53.03.0166 | | IC-Socket, 8 pins | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | |
| ③ | | | |
| ② | | | |
| ① | | | also valid for correlator 4CH 1.913.211 |
| ○ | 20-8-81 | ny | |

## PEAK PROGRAM METER

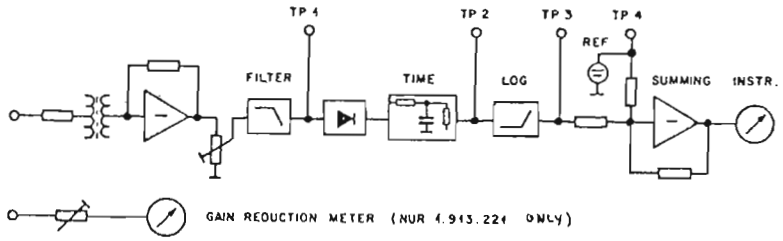
Aussteuerungsmesser mit symmetrisch, erdfreiem Eingang. Dynamisches Verhalten gemäss IEC / DIN Normen.

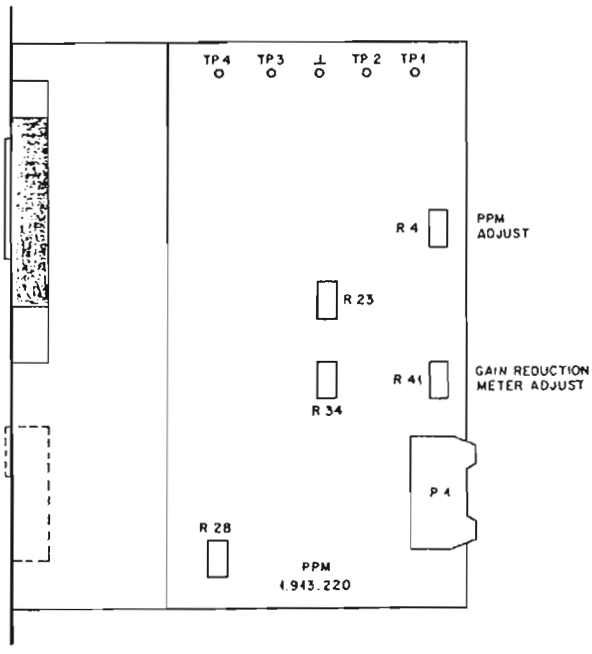
## PEAK PROGRAM METER

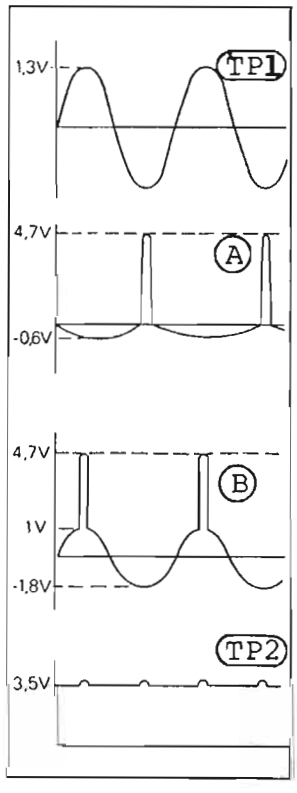
Level indicator with balanced and floating input. Dynamic response according to IEC / DIN standards.

### Blockschaltbild

### Block Diagram




### Abgleich

1) Leitungspegel + 6 ... + 15 dB 1 kHz am Eingang.
2) + 3,5 V an TP2 mit R4 (Pegel PPM)
3) 0 dB am Instrument mit R28
4) - 30 dB am Instrument mit R34
5) - 40 dB am Instrument mit R23

### Calibration

1) Line level +6 ... +15 dB 1 kHz at input
2) +3.5 V at TP2, adjust with R4 (level PPM)
3) 0 dB at instrument adjust with R28
4) -30 dB at instrument adjust with R34
5) -40 dB at instrument adjust with R23

Die mechanische Nullstellung des Messwerkes liegt bei Referenzanzeige 0 dB. Für Pegel, deren Anzeige 0 ... + 6 dB ergibt, wechselt die Polarität der Ausgangsspannung am Verstärker 4.2.

## TECHNISCHE DATEN

Eingangsempfindlichkeit für Referenzanzeige (0 dB):
+ 6 dBu ... + 15 dBu
Eingangsimpedanz >10 kOhm

Anzeigebereich:
- 40 dB ... + 6 dB

Genauigkeit bei 20° C, 1 kHz
- 40 dB ... + 6 dB: ± 0,5 dB

Frequenzgang bei Referenzanzeige 0° C ... 50° C,
31,5 Hz ... 15 kHz: ± 0,5 dB

Temperatureinfluss bei Referenzanzeige, 1 kHz,
0° C ... 50° C: < Fehler 0,5 dB

Dynamisches Verhalten:

Ueberschwingen: ≤ 1 dB

Ansprechzeit auf
- 1 dB ± 0,5 dB: 10 ms
- 4 dB ± 1 dB: 3 ms

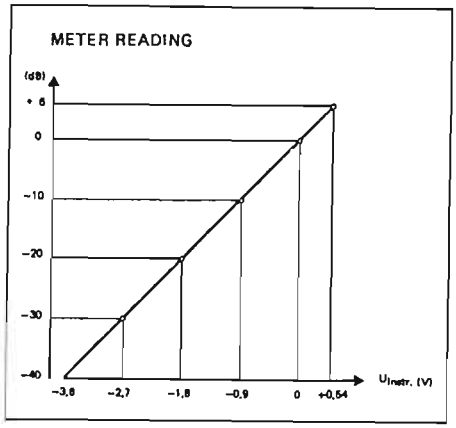
Rücklaufzeit 0 ... - 20 dB: 1,7 s ± 0,3 s

Stromaufnahme bei ± 15 V: Ca 15 mA

## MECHANISCHE DATEN

| | |
|---|---|
| Frontplatte dunkelgrau gespritzt | |
| Abmessungen Frontplatte | 170 x 80 mm |
| Tiefe | 135 mm |
| Gewicht | 360 gr |

The mechanical zero position of the instrument corresponds to the reference indication 0 dB. For levels which give a deflection of 0 ... +6 dB on the scale, the amplifier 4.2 changes the polarity of the output voltage.




## SPECIFICATIONS

Input sensitivity for reference indication (0 dB):
+6 dBu ... +15 dBu
Input impedance >10 kOhm

Indicating range
-40 dB ... +6 dB

Accuracy at 20° C, 1 kHz
-40 dB ... +6 dB: ± 0.5 dB

Frequency response at reference indication
0°C ... 50°C
31.5 Hz ... 15 kHz: ± 0.5 dB

Influence of temperature at reference indication,
1 kHz 0°C ... 50°c: error 0.5 dB

Dynamic response:

Overswing: 1 dB

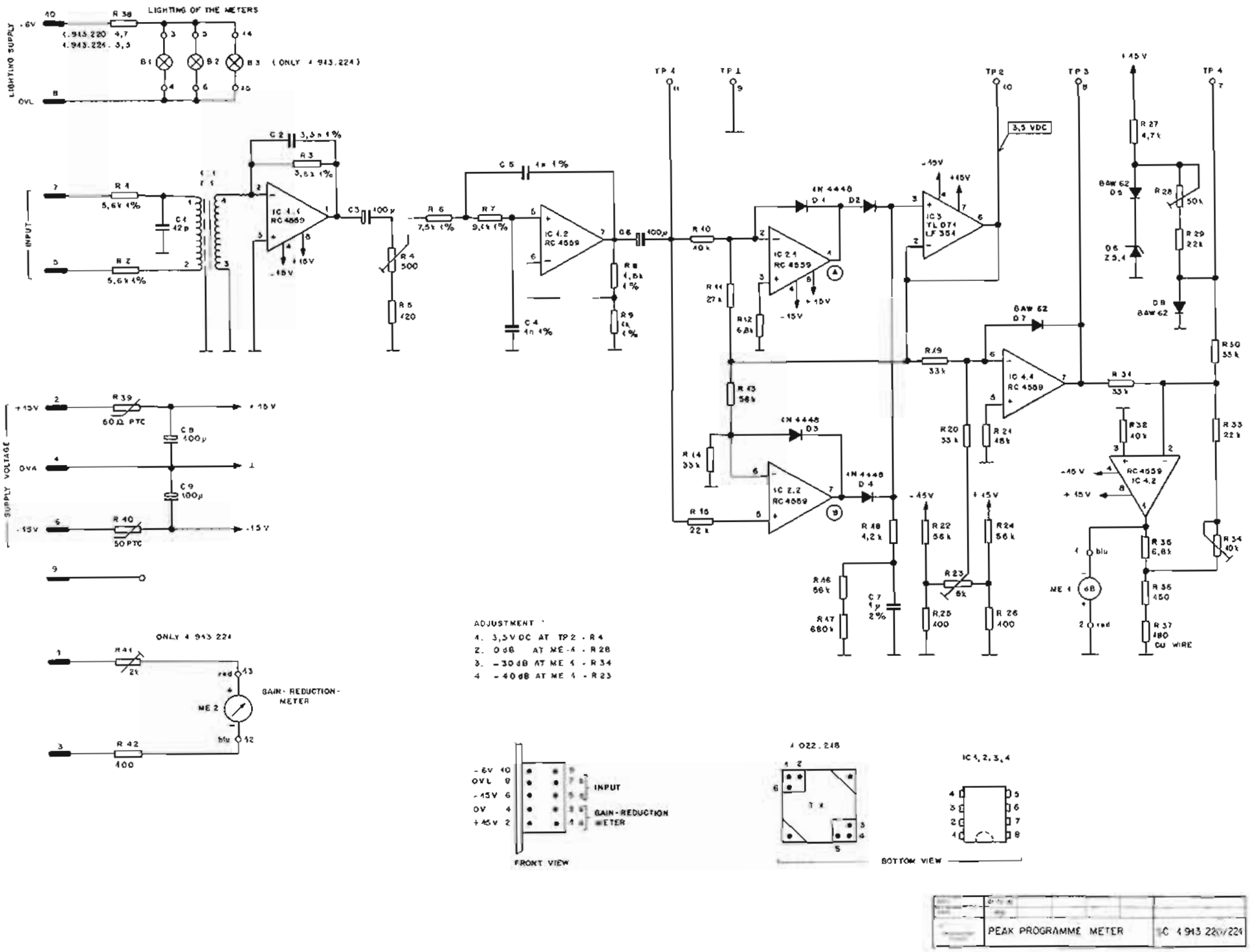
Attack time to
-1 dB ± 0.5 dB: 10 ms
-4 dB ± 1 dB: 3 ms

Return time 0 ... -20 dB: 1.7 s ± 0.3 s

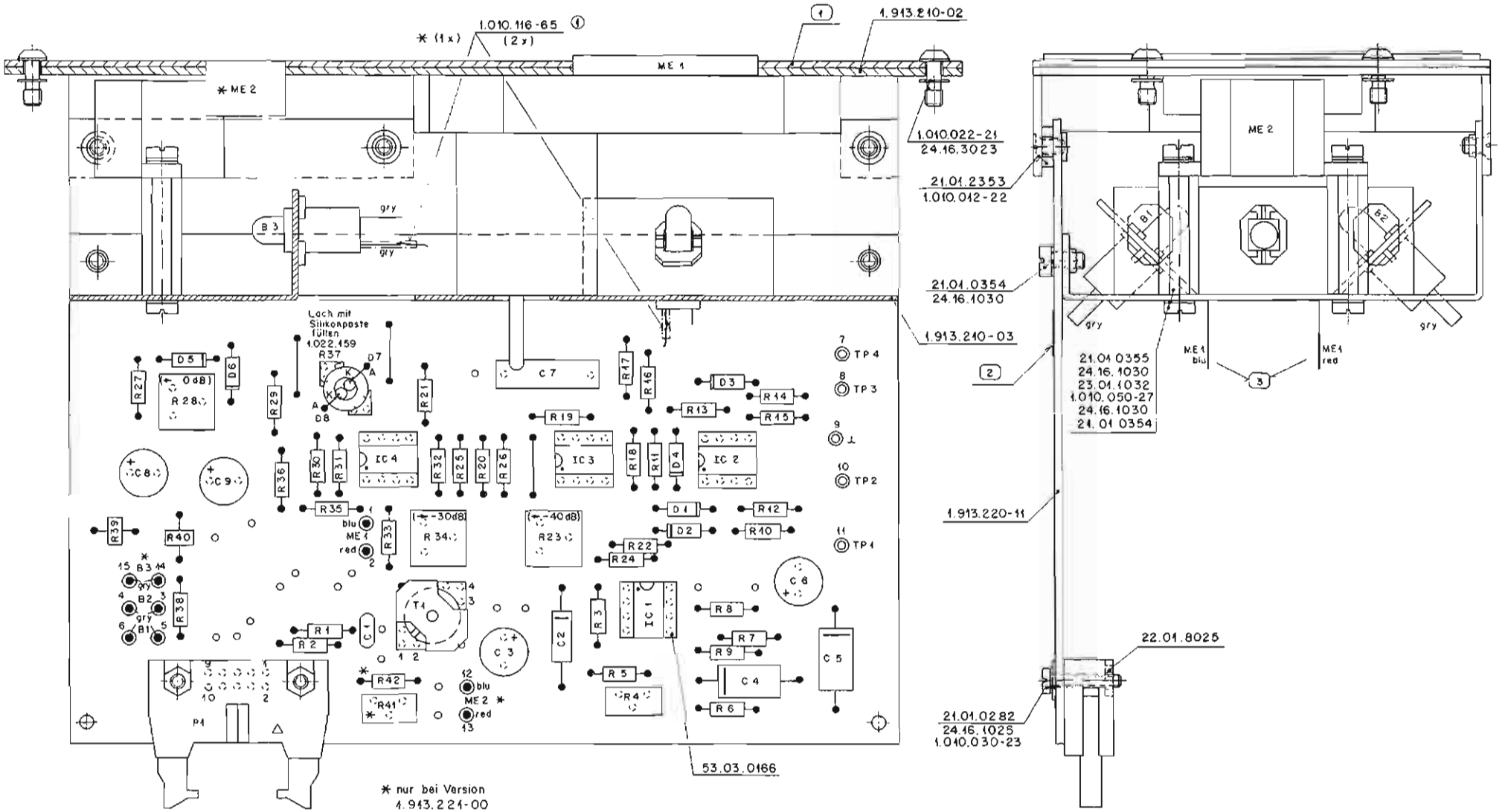
Connected load at ± 15 V: approx. 15 mA

## PHYSICAL DATA

| | |
|---|---|
| Front panel laquered charcoal grey | |
| Dimensions of front panel | 170 x 80 mm |
| Depth | 135 mm |
| Weight | 360 g |




| | | |
|---|---|---|
| | PEAK PROGRAMME METER | IC 4 943 220/224 |




| Gültig für : | 1 | 2 | 3 |
|---|---|---|---|
| 1.913.220-00 | 1.913.210-01 | 1.913.220-04 | 1.913.210-93 |
| 1.913.221-00 | 1.913.221-01 | 1.913.221-04 | 1.913.221-93 |

| | | | |
|---|---|---|---|
| Werkstoff: Norm-Nr / DIN-Bez / Abmessung | Oberfläche: Gute / Ben | | Änderung: 1012 84 A.Ho |
| Zugehörige Unterlagen: PL | Freimasstoleranz: | Maßstab: 2:1 | Ausgabe: 11.2.83 A.Ho; Datum / Gez / Gepr / Ges / Index |
| Ersatz für: | Ersetzt durch: | | Kopie für: |
| STUDER REGENSDORF ZÜRICH | Benennung: Peak Programme Meter | | Nummer: 1.913.220-00 |

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | C1 | 59.34.4120 | 12pF | 5% | |
| | C2 | 59.12.7332 | 3,3nF | 1% | |
| | C3 | 59.22.5101 | 100µF | 16V | |
| | C4 | 59.12.9102 | 1 nF | 1% | |
| | C5 | 59.12.9102 | 1 nF | 1% | |
| | C6 | 59.22.5101 | 100µF | 16V | |
| | C7 | 59.99.0508 | 1 µF | 2% | |
| | C8 | 59.22.5101 | 100µF | 16V | |
| | C9 | 59.22.5101 | 100µF | 16V | |
| | D1 | 50.04.0125 | 1N4448 | | any |
| | D2 | 50.04.0125 | 1N4448 | | any |
| | D3 | 50.04.0125 | 1N4448 | | any |
| | D4 | 50.04.0125 | 1N4448 | | any |
| | D5 | 50.04.0132 | BAW62 | only | PH |
| | D6 | 50.04.1112 | ZPD5,1 | 5,1V at 5mA, 5% | ITT |
| | D7 | 50.04.0132 | BAW62 | only | PH |
| | D8 | 50.04.0132 | BAW62 | only | PH |
| | IC1 | 50.09.0107 | RC4558NB | | RA, TI |
| | IC2 | 50.09.0107 | RC4558NB | | RA, TI |
| | IC3 | 50.09.0103 | TL071CP | LF351N | TI, N |
| | IC4 | 50.09.0107 | RC4558NB | | RA, TI |
| | ME1 | 1.913.001.01 | | Peak Programme Meter | |
| | ME2 | 1.169.300.02 | | Gain-Reduction-Meter (only 1.913.221) | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 20-8-81 | My |

PH Philips N National Sem.
RA Raytheon
TI Texas Instr.
also valid for PPM with
gain reduction meter 1.913.221

STUDER | PEAK PROGRAMME METER | 1.913.220 | PAGE 1 OF 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R1 | 57.11.3562 | 5,6k | 1% | |
| | R2 | 57.11.3562 | 5,6k | 1% | |
| | R3 | 57.11.3362 | 3,6k | 1% | |
| | R4 | 58.01.7501 | 500 | TRIM | |
| | R5 | 57.11.4121 | 120 | | |
| | R6 | 57.11.3752 | 7,5k | 1% | |
| | R7 | 57.11.3912 | 9,1k | 1% | |
| | R8 | 57.11.3152 | 1,5k | 1% | |
| | R9 | 57.11.3102 | 1k | 1% | |
| | R10 | 57.11.4103 | 10k | | |
| | R11 | 57.11.4273 | 27k | | |
| | R12 | 57.11.4682 | 6,8k | | |
| | R13 | 57.11.4563 | 56k | | |
| | R14 | 57.11.4333 | 33k | | |
| | R15 | 57.11.4223 | 22k | | |
| | R16 | 57.11.4563 | 56k | | |
| | R17 | 57.11.4684 | 680k | 2% | |
| | R18 | 57.11.4122 | 1,2k | | |
| | R19 | 57.11.4333 | 33k | | |
| | R20 | 57.11.4333 | 33k | | |
| | R21 | 57.11.4183 | 18k | | |
| | R22 | 57.11.4563 | 56k | | |
| | R23 | 58.01.8502 | 5k | TRIM | |
| | R24 | 57.11.4563 | 56k | | |
| | R25 | 57.11.4101 | 100 | | |
| | R26 | 57.11.4101 | 100 | | |
| | R27 | 57.11.4472 | 4,7k | | |
| | R28 | 58.01.8503 | 50k | TRIM | |
| | R29 | 57.11.4223 | 22k | | |
| | R30 | 57.11.4333 | 33k | | |

| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 20-8-81 | My |

STUDER | PEAK PROGRAMME METER | 1.913.220 | PAGE 2 OF 3

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R31 | 57.11.4333 | 33k | | |
| | R32 | 57.11.4103 | 10k | | |
| | R33 | 57.11.4223 | 22k | | |
| | R34 | 58.01.8103 | 10k | TRIM | |
| | R35 | 57.11.4682 | 6,8k | | |
| | R36 | 57.11.4151 | 150 | | |
| | R37 | 1.022.159.00 | 180 | Cu-Wire | STUDER |
| | R38 | 57.11.4479 | 4,7Ω | 1.913.221: 3,3Ω | |
| | R39 | 57.99.0206 | 50Ω | PTC | |
| | R40 | 57.99.0206 | 50Ω | PTC | |
| | R41 | 58.01.7202 | 2k | TRIM only 1.913.221 | |
| | R42 | 57.11.4101 | 100 | only 1.913.221 | |
| | T1 | 1.022.218.00 | 1:1 | Input Trafo | STUDER |
| | B1 | 51.02.0144 | 6V, 30mA | Lamp | |
| | B2 | 51.02.0144 | 6V, 30mA | Lamp | |
| | B3 | 51.02.0144 | 6V, 30mA | Lamp | |
| | P1 | 54.14.2011 | | Connector | |
| | XIC | 53.03.0166 | | IC-Socket 8pins | |

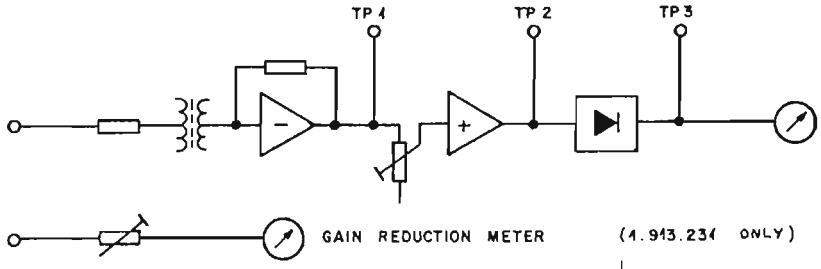
| IND | DATE | NAME |
|---|---|---|
| ④ | | |
| ③ | | |
| ② | | |
| ① | | |
| ○ | 20-8-81 | My |

STUDER | PEAK PROGRAMME METER | 1.913.220 | PAGE 3 OF 3

## VU-METER

VU-Meter mit symmetrisch, erdfreiem und hochohmigem Eingang. Dynamische Daten gemäss IEC.

Blockschaltbild




Einmessen:

TP1: Variabel (0,1 V ... 0,35 Veff)

TP2: 1 Veff

TP3: - 3,6 V p Vollweg-Gleichrichtung

Mit R 4 kann die Referenzanzeige (0 VU) für Eingangssignale zwischen 0 dBu und + 10 dBu eingestellt werden.

TECHNISCHE DATEN

| | |
|---|---|
| Eingangsempfindlichkeit für Referenzanzeige (0 VU) | 0 dBu ... + 10 dBu |
| Eingangsimpedanz | > 10 kOhm |
| Anzeigebereich | - 20 VU ... + 3 VU |
| Genauigkeit bei 20°C, 1 kHz, -10 VU ... +3 VU | ± 0,5 VU |
| Frequenzgang für Referenzanzeige 0°C ... 50°C, 31,5 Hz ... 15 kHz | ± 0,5 VU |
| Ansprechzeit auf - 1 VU | 207 ms ± 30 ms |
| Speisung | + 15 V 10 mA<br>- 15 V 10 mA<br>- 6 V 60 mA (90 mA) |

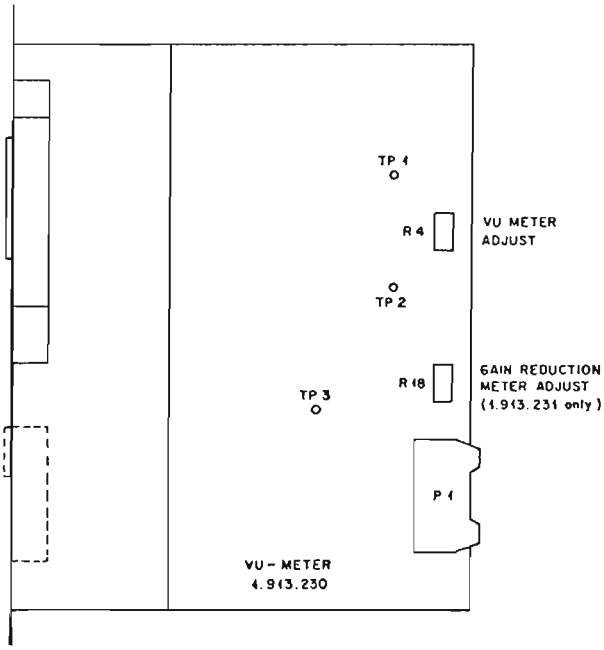
MECHANISCHE DATEN

| | |
|---|---|
| Frontplatte dunkelgrau gespritzt | |
| Abmessungen Frontplatte | 170 x 80 mm |
| Tiefe | 135 mm |
| Gewicht | 310 gr |

## VU-Meter

VU-meter with balanced, floating and high-impedance input. Dynamic response according to IEC.

Block diagram




Calibration

TP1: Variable (0.1 V ... 0.35 Veff)
TP2: 1 Veff
TP3: -3.6V p full-wave rectification

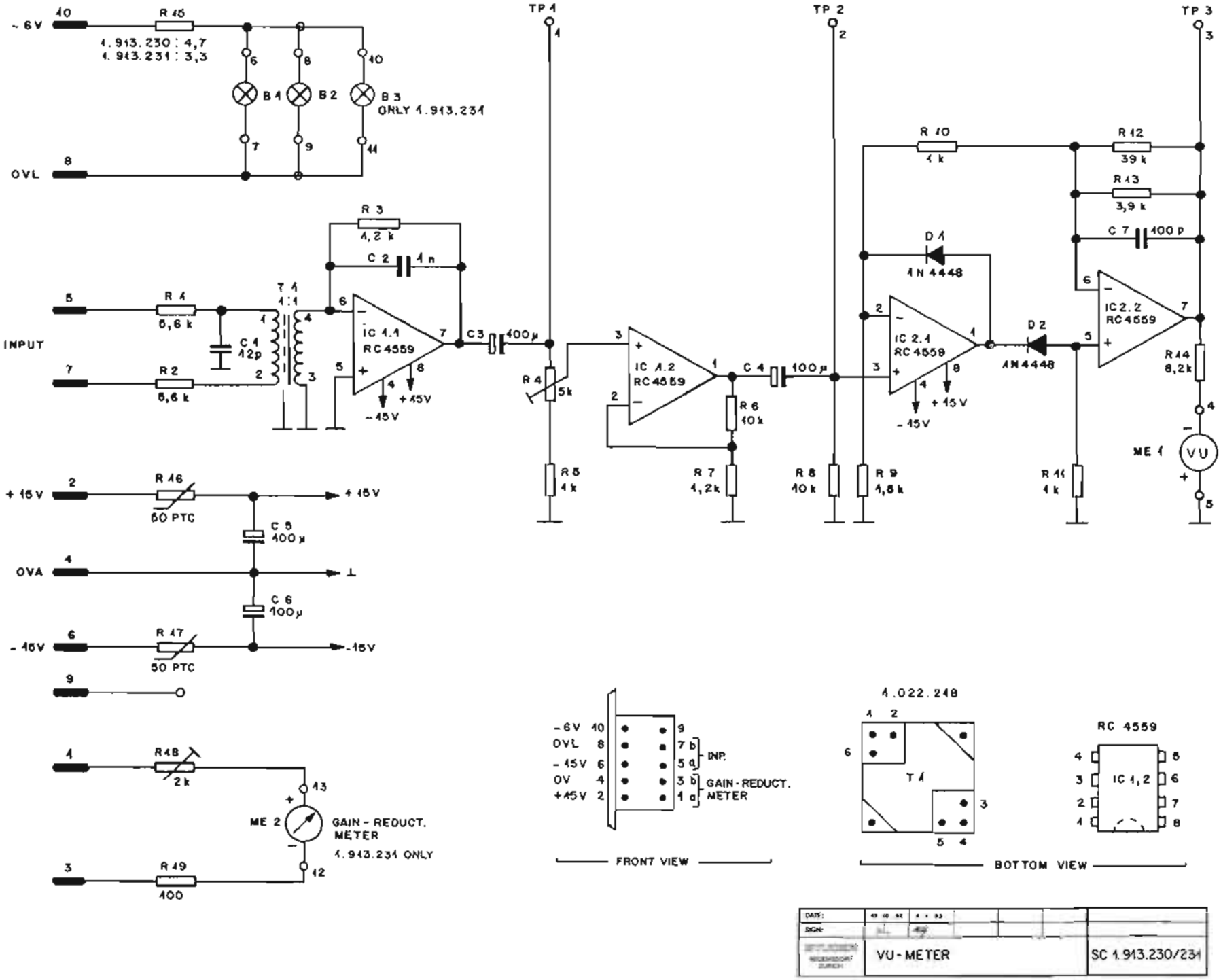
The reference indication (0 VU) for input signals between 0 dBu and +10 dBu can be adjusted with R4.

SPECIFICATIONS

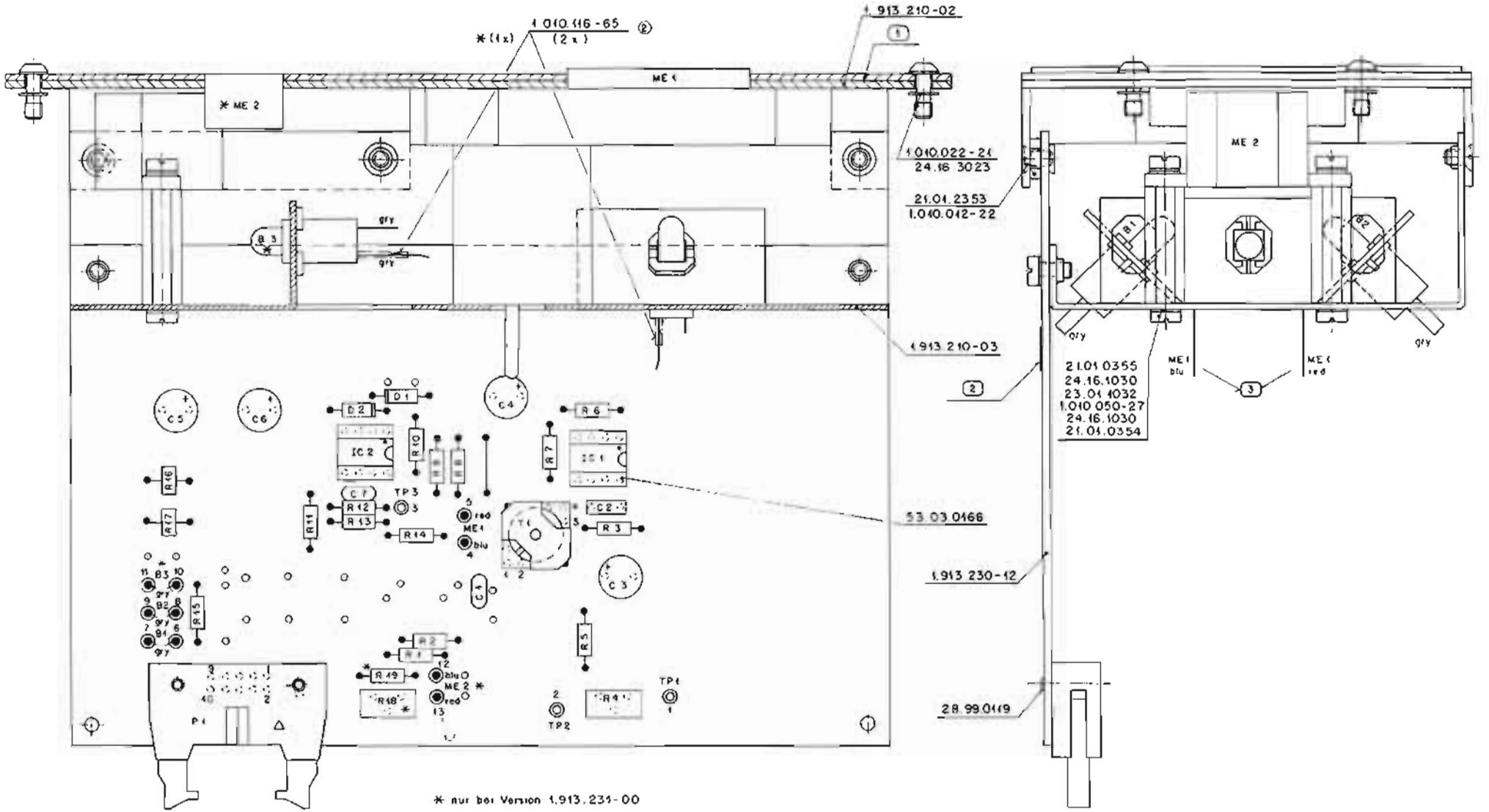
| | |
|---|---|
| Input sensitivity for reference indication (0 VU) | 0 dBu ... +10 dBu |
| Input impedance | >10 kOhm |
| Indicating range | -20 VU ... + 3 VU |
| Accuracy at 20°C, 1 kHz, -10 VU ... +3 VU | ±0.5 VU |
| Frequency response for reference 0°C ... 50°C, 31.5 Hz ... 15 kHz | ±0.5 VU |
| Attack time to -1 VU | 207 ms ±30 ms |
| Supply | +15 V 10mA<br>-15 V 10mA<br>- 6 V 60mA (90mA) |

PHYSICAL DATA

| | |
|---|---|
| Front panel sprayed charcoal grey | |
| Dimension of front panel | 170 x 80mm |
| Depth | 135mm |
| Weight | 310 g |




| | | | |
|---|---|---|---|
| DATE: | 19 10 92 | 4 : 1 | |
| SIGN: | | | |
| | VU - METER | | SC 1.913.230/231 |




* nur bei Version 1.913.231-00

| Gültig für: | 1 | 2 | 3 |
|---|---|---|---|
| 1.913.230-00 | 1.913.210-01 | 1.913.230-04 | 1.913.210-93 |
| 1.913.231-00 | 1.913.221-01 | 1.913.231-04 | 1.913.221-93 |

| | | | |
|---|---|---|---|
| Norm-Nr. | Gusi | | Änderung: 10.12.84 A.Ho. 3 / 4.1.84 A.Ho. 2 / 1 |
| DIN-Bez. | Bem. | | |
| Abmessung: | | | |
| Zugehörige Unterlagen: PL | Formatspiralmarke: 1 | Maßstab: 2:1 | Ausgabe: 11.2.83 A.Ho. 0 |
| Ersatz für: | Ersetzt durch: | | Kopie Nr.: |

STUDER REGENSDORF ZÜRICH

Benennung: VU-Meter

Nummer: 1.913.230-00

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | C1 | 59.34.1120 | 12 pF | 5% | |
| | C2 | 59.06.0102 | 1 nF | 10% | |
| | C3 | 59.22.5101 | 100 µF | ≥ 16V | |
| | C4 | 59.22.5101 | 100 µF | ≥ 16V | |
| | C5 | 59.22.5101 | 100 µF | ≥ 16V | |
| | C6 | 59.22.5101 | 100 µF | ≥ 16V | |
| | C7 | 59.34.4101 | 100 pF | 5% | |
| | | | | | |
| | D1 | 50.04.0125 | 1N4448 | | any |
| | D2 | 50.04.0125 | 1N4448 | | any |
| | | | | | |
| | | | | | |
| | IC1 | 50.09.0107 | RC4559NB | Dual OP AMP | Ra, TI |
| | IC2 | 50.09.0107 | RC4559NB | Dual OP AMP | Ra, TI |
| | | | | | |
| | | | | | |
| | R1 | 57.11.3562 | 5,6 k | 1% | |
| | R2 | 57.11.3562 | 5,6 k | 1% | |
| | R3 | 57.11.4122 | 1,2k | | |
| | R4 | 58.01.7502 | 5 k | TRIM-POTM. | |
| | R5 | 57.11.4102 | 1 k | | |
| | R6 | 57.11.4103 | 10 k | | |
| | R7 | 57.11.4122 | 1,2 k | | |
| | R8 | 57.11.4103 | 10 k | | |
| | R9 | 57.11.4182 | 1,8 k | | |
| | R10 | 57.11.4102 | 1 k | | |
| | R11 | 57.11.4102 | 1 k | | |
| | R12 | 57.11.4393 | 39 k | | |
| | R13 | 57.11.4392 | 3,9 k | | |
| | R14 | 57.11.4822 | 8,2k | | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | Ra Raytheon |
| ③ | | | TI Texas Instr. |
| ② | | | also valid for VU-meter with |
| ① | | | gain reduction meter 1.913.231 |
| ○ | 20-8-81 | My | |

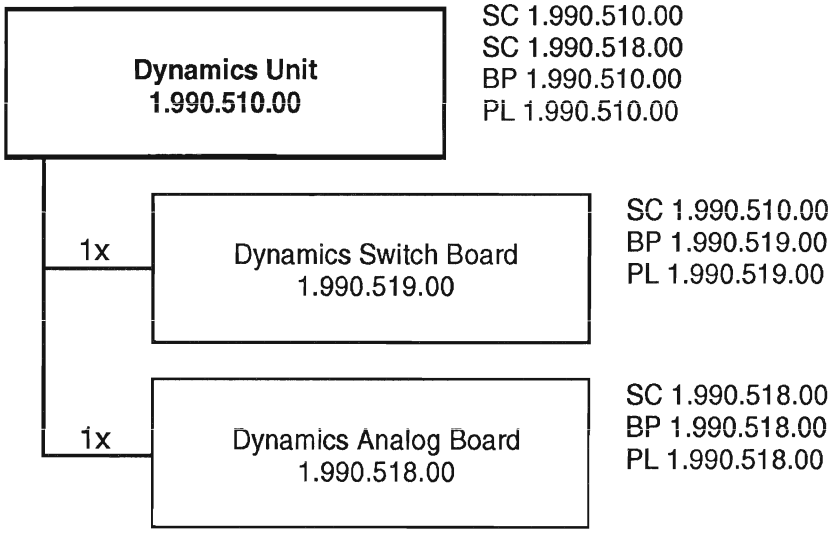
| STUDER | VU-METER | 1.913.230 | PAGE 1 OF 2 |
|---|---|---|---|

| IND | POS NO | PART NO | VALUE | SPECIFICATIONS/EQUIVALENT | MFR |
|---|---|---|---|---|---|
| | R15 | 57.11.4479 | 4,7 Ω | 1.913.231 : 3,3 Ω (57.11.4339) | |
| | R16 | 57.99.0206 | 50 | PTC PHILIPS 2.322.661 91002 | |
| | R17 | 57.99.0206 | 50 | PTC PHILIPS 2.322.661.91002 | |
| | R18 | 58.01.7202 | 2k | Trim-Pot. (only 1.913.231) | |
| | R19 | 57.11.4101 | 100 | (only 1.913.231) | |
| | | | | | |
| | T1 | 1.022.218.00 | 1:1 | Input Trafo | |
| | | | | | |
| | B1 | 51.02.0144 | 6V, 30mA | Lamp | |
| | B2 | 51.02.0144 | 6V, 30mA | Lamp | |
| | ME1 | 1.913.001.02 | | VU-Meter | |
| | ME2 | 1.169.900.02 | | Gain-Reduction Meter (only 1.913.231) | |
| | P1 | 54.14.2011 | | Connector 10 pins | |
| | XIC | 53.03.0166 | | IC-Socket 8pins DIP | |
| | | | | | |
| | B3 | 51.02.0144 | 6V, 30mA | Lamp (only 1.913.231) | |

| IND | DATE | NAME | |
|---|---|---|---|
| ④ | | | |
| ③ | | | |
| ② | | | also valid for VU-meter with |
| ① | | | gain reduction meter 1.913.231 |
| ○ | 20-8-81 | My | |

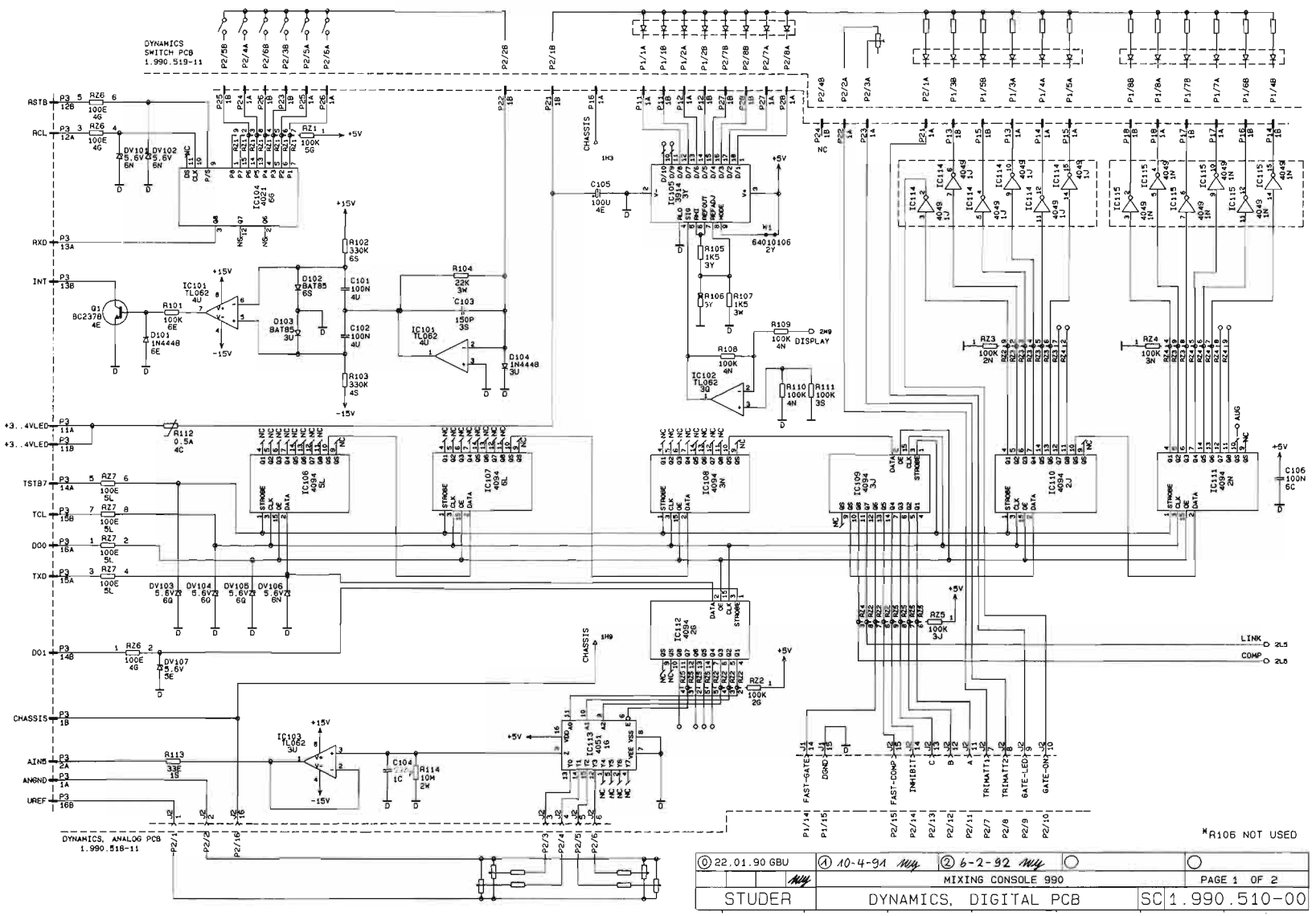
| STUDER | VU-METER | 1.913.230 | PAGE 2 OF 2 |
|---|---|---|---|

# Dynamics Unit 1.990.510.00

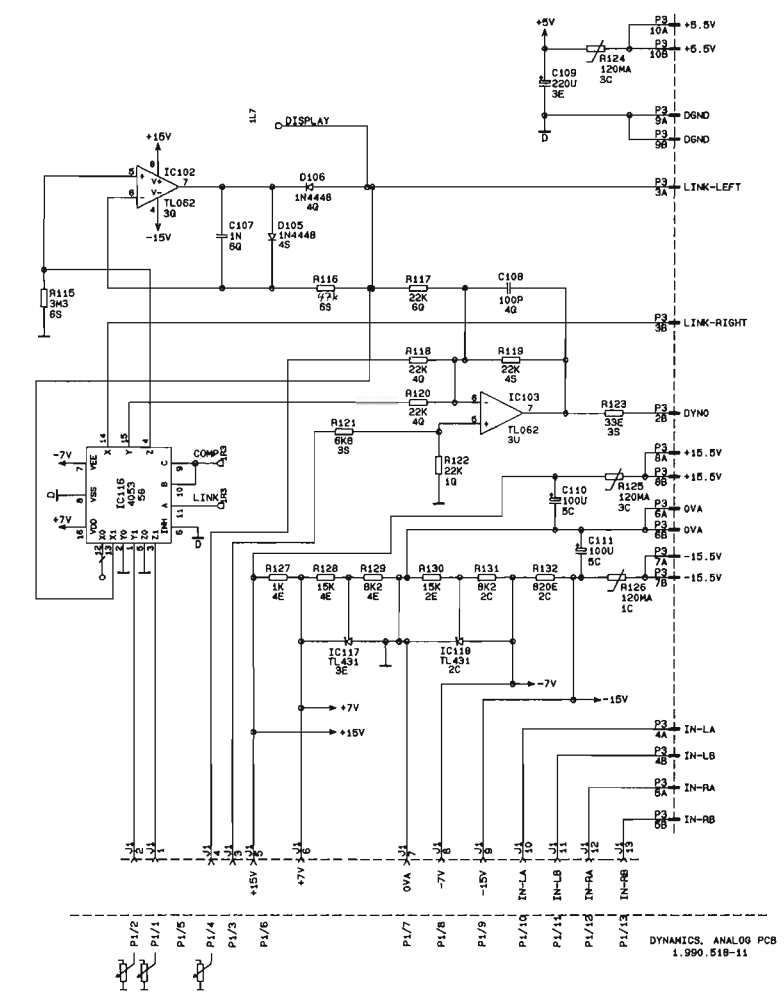



**SC:** Schema Circuit Diagram
**BP:** Bestückungsplan PCB Layout
**PL:** Positionsliste Positional List

DYNAMICS, DIGITAL PCB 1.990.510.00

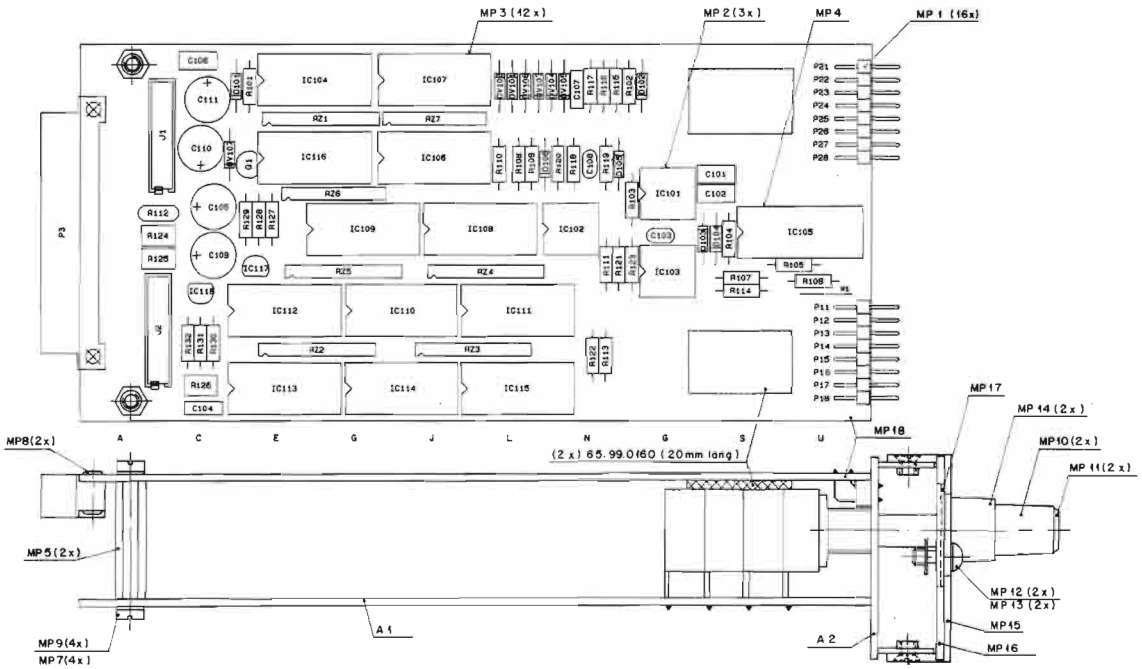


DYNAMICS, DIGITAL PCB 1.990.510.00




| | | | | |
|---|---|---|---|---|
| ⓪ 22.01.90 GBU | ① 10-4-91 | ② 6-2-92 | ○ | ○ |
| | MIXING CONSOLE 990 | | | PAGE 2 OF 2 |
| STUDER | DYNAMICS, DIGITAL PCB | | SC | 1.990.510-00 |

## DYNAMICS UNIT LIM./COMP./GATE ESE 1.990.510.00




| Ad | ..POS.. | ...REF.No... | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|
| | A.....1 | 1.990.518.00 | dynamics analog board | |
| | A.....2 | 1.990.519.00 | dynamics switch board | |
| | C...101 | 59.06.0104 | 100 nF 10% PE | |
| | C...102 | 59.06.0104 | 100 nF 10% PE | |
| | C...103 | 59.34.4151 | 150 pF CER | |
| | C...104 | 59.06.0103 | 10 nF 10% PE | |
| 01 | C...104 | 59.34.4271 | 270 pF CER | |
| | C...105 | 59.22.5101 | 100 uF 25V EL | |
| | C...106 | 59.06.0104 | 100 nF 10% PE | |
| | C...107 | 59.06.0102 | 1 nF 10% PE | |
| | C...108 | 59.34.4101 | 100 pF CER | |
| | C...109 | 59.22.3221 | 220 uF 10V EL | |
| | C...110 | 59.22.5101 | 100 uF 25V EL | |
| | C...111 | 59.22.5101 | 100 uF 25V EL | |
| | D...101 | 50.04.0125 | 1N4448 | any |
| | D...102 | 50.04.0127 | BAT85 BAT42 schottky | Sie,Ph,SGS |
| | D...103 | 50.04.0127 | BAT85 BAT42 schottky | Sie,Ph,SGS |
| | D...104 | 50.04.0125 | 1N4448 | any |
| | D...105 | 50.04.0125 | 1N4448 | any |
| | D...106 | 50.04.0125 | 1N4448 | any |
| | DV..101 | 50.04.1108 | 5.6V Z-diode | any |
| | DV..102 | 50.04.1108 | 5.6V Z-diode | any |
| | DV..103 | 50.04.1108 | 5.6V Z-diode | any |
| | DV..104 | 50.04.1108 | 5.6V Z-diode | any |
| | DV..105 | 50.04.1108 | 5.6V Z-diode | any |
| | DV..106 | 50.04.1108 | 5.6V Z-diode | any |
| | DV..107 | 50.04.1108 | 5.6V Z-diode | any |
| | IC..101 | 50.09.0119 | TL062 dual FET-op.amp. | TI,Mot,SGS |
| | IC..102 | 50.09.0119 | TL062 dual FET-op.amp. | TI,Mot,SGS |
| | IC..103 | 50.09.0119 | TL062 dual FET-op.amp. | TI,Mot,SGS |
| | IC..104 | 50.07.1021 | CD4021 8-bit static shift register | Ph,Mot,RCA |
| | IC..105 | 50.11.0119 | LM3914 display driver | NS |
| | IC..106 | 50.07.0018 | CD4094 shift and store bus register | Ph,Mot,RCA |
| | IC..107 | 50.07.0018 | CD4094 shift and store bus register | Ph,Mot,RCA |
| | IC..108 | 50.07.0018 | CD4094 shift and store bus register | Ph,Mot,RCA |
| | IC..109 | 50.07.0018 | CD4094 shift and store bus register | Ph,Mot,RCA |
| | IC..110 | 50.07.0018 | CD4094 shift and store bus register | Ph,Mot,RCA |

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|
| | IC..111 | 50.07.0018 | CD4094 shift and store bus register | Ph,Mot,RCA |
| | IC..112 | 50.07.0018 | CD4094 shift and store bus register | Ph,Mot,RCA |
| | IC..113 | 50.07.0051 | CD4051 8-channel analog mux/demux | Ph,Mot,RCA |
| | IC..114 | 50.07.0049 | CD4049 hex inverting buffer CMOS | Ph,To |
| | IC..115 | 50.07.0049 | CD4049 hex inverting buffer CMOS | Ph,To |
| | IC..116 | 50.07.0015 | CD4053 3*2-ch.analog mux/demux | Ph,Mot,RCA |
| | IC..117 | 50.10.0106 | TL431CLP | Mot,TI |
| | IC..118 | 50.10.0106 | TL431CLP | Mot,TI |
| | J.....1 | 54.14.5516 | micro-match, 16p | |
| | J.....2 | 54.14.5516 | micro-match, 16p | |
| | MP....1 | 54.11.0131 | 16 pcs Steckerstifte 2-reihig, gebogen | |
| | MP....2 | 53.03.0166 | 3 pcs IC-socket 8 pin | |
| | MP....3 | 53.03.0168 | 12 pcs IC-socket 16 pin | |
| | MP....4 | 53.03.0175 | 1 pcs IC-socket 18 pin | |
| | MP....5 | 1.010.047.27 | 2 pcs Mutterbolzen M3x23 | |
| | MP....6 | 21.01.2352 | 4 pcs S-Schraube M3x4 | |
| | MP....7 | 24.16.1030 | 4 pcs Rippenscheibe 3.2/5.5 | |
| | MP....8 | 28.99.0139 | 2 pcs Rohrniete | |
| | MP....9 | 21.01.0354 | 4 pcs Z-Schraube M3x6 | |
| | MP...10 | 42.01.0203 | 2 pcs Drehknopf | |
| | MP...11 | 42.01.0251 | 2 pcs Deckel | |
| | MP...12 | 24.16.3023 | 2 pcs Wellensicherung | |
| | MP...13 | 1.010.022.21 | 2 pcs Linsenschraube M3x8 spez. | |
| | MP...14 | 1.912.000.03 | 2 pcs Drehring | |
| | MP...15 | 1.990.510.01 | 1 pcs Frontschild | |
| | MP...16 | 1.990.510.02 | 1 pcs Trager | |
| | MP...17 | 1.990.510.03 | 1 pcs Fenster | |
| | MP...18 | 1.990.510.11 | 1 pcs PCB | |
| | P.....3 | 54.11.2013 | 2*16 pin eurocard connector, male | |
| | Q.....1 | 50.03.0436 | BC2378 NPN TO92-1 | |
| | R...101 | 57.11.3104 | 100 kOhm | |
| | R...102 | 57.11.3334 | 330 kOhm | |
| | R...103 | 57.11.3334 | 330 kOhm | |
| | R...104 | 57.11.3223 | 22 kOhm | |
| | R...105 | 57.11.3152 | 1.5 kOhm | |
| | R...106 | - - - | not installed | |
| | R...107 | 57.11.3152 | 1.5 kOhm | |
| | R...108 | 57.11.3104 | 100 kOhm | |
| | R...109 | 57.11.3104 | 100 kOhm | |
| | R...110 | 57.11.3104 | 100 kOhm | |
| | R...111 | 57.11.3104 | 100 kOhm | |
| | R...112 | 57.92.7013 | PTC 0.5A | Raychem |
| | R...113 | 57.11.3330 | 33 Ohm | |
| | R...114 | 57.11.5106 | 10 MOhm | |
| | R...115 | 57.11.5335 | 3.3 MOhm | |
| | R...116 | 57.11.3822 | 8.2 kOhm | |
| 02 | R...116 | 57.11.3473 | 47 kOhm | |
| | R...117 | 57.11.3223 | 22 kOhm | |
| | R...118 | 57.11.3223 | 22 kOhm | |
| | R...119 | 57.11.3223 | 22 kOhm | |
| | R...120 | 57.11.3223 | 22 kOhm | |
| | R...121 | 57.11.3682 | 6.8 kOhm | |
| | R...122 | 57.11.3223 | 22 kOhm | |
| | R...123 | 57.11.3330 | 33 kOhm | |
| | R...124 | 57.92.1121 | PTC 120mA | Ph |
| | R...125 | 57.92.1121 | PTC 120mA | Ph |
| | R...126 | 57.92.1121 | PTC 120mA | Ph |
| | R...127 | 57.11.3102 | 1 kOhm | |
| | R...128 | 57.11.3153 | 15 kOhm | |
| | R...129 | 57.11.3822 | 8.2 kOhm | |
| | R...130 | 57.11.3153 | 15 kOhm | |
| | R...131 | 57.11.3822 | 8.2 kOhm | |
| | R...132 | 57.11.3821 | 820 Ohm | |
| | RZ....1 | 57.88.4104 | 8*100kOhm | |
| | RZ....2 | 57.88.4104 | 8*100kOhm | |
| | RZ....3 | 57.88.4104 | 8*100kOhm | |
| | RZ....4 | 57.88.4104 | 8*100kOhm | |
| | RZ....5 | 57.88.4104 | 8*100kOhm | |
| | RZ....6 | 57.88.2101 | 4*100 Ohm | |
| | RZ....7 | 57.88.2101 | 4*100 Ohm | |
| | W.....1 | 64.01.0106 | wire bridge | |

CER = ceramic, EL = electrolytic, PE = polyester

MANUFACTURER
Mot=Motorola, NS=National Semiconductors, Ph=Philips, Siu=Siemens,
SGS=SGS/Thomson, TI=Texas Instruments, To=Toshiba

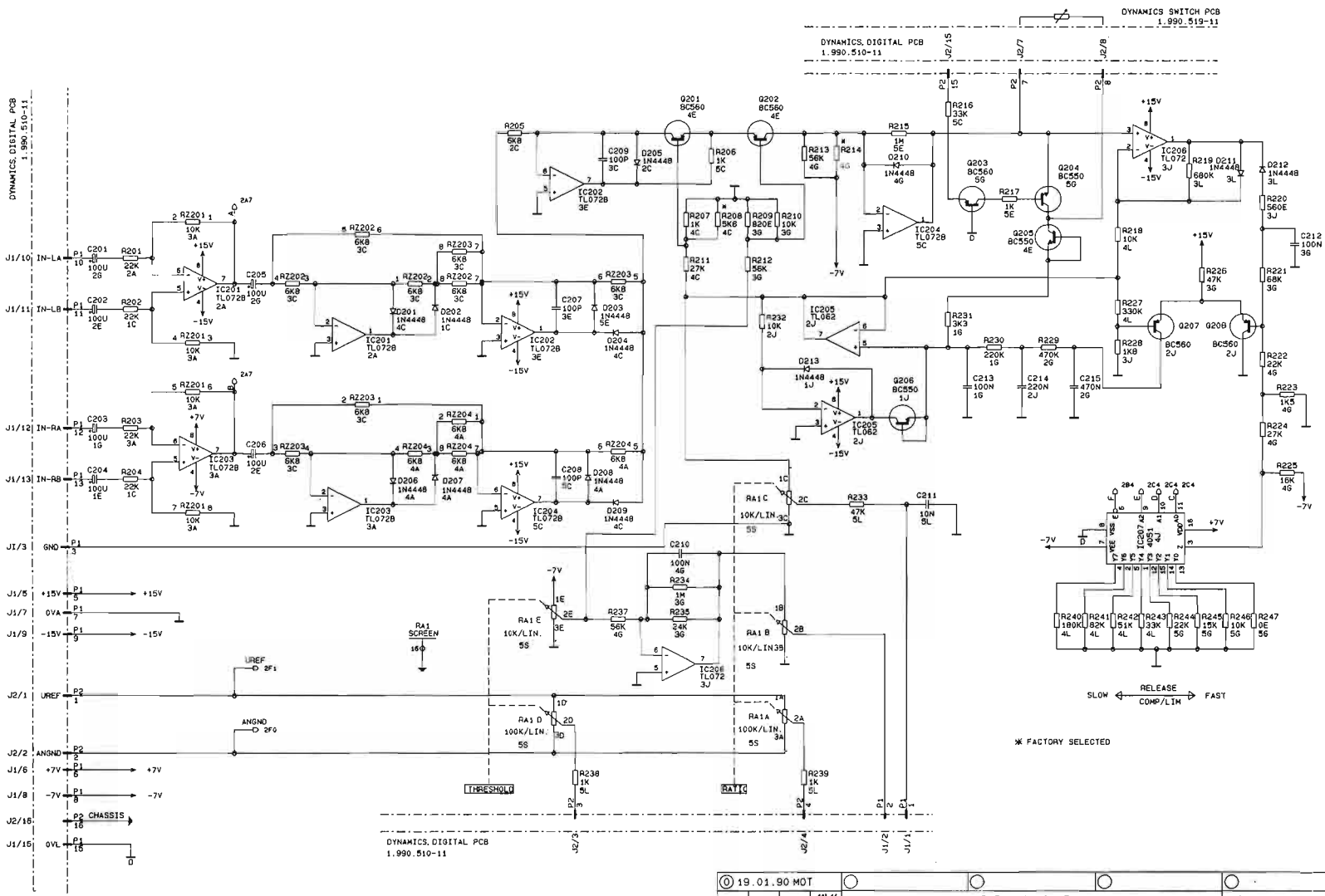
HISTORY
01 91-04-10 C104 10nF replaced by 270pF
02 92-02-06 R116 8.2k replaced by 47k

| | | | |
|---|---|---|---|
| 1.990.510.00 | DYNAMICS DIGITAL BOARD | WY 90/01/2500 | |
| 1.990.510.00 | DYNAMICS DIGITAL BOARD | WY 91/04/1001 | |
| 1.990.510.00 | DYNAMICS DIGITAL BOARD | WY 92/02/0602 | |

Änderung 3.4.90

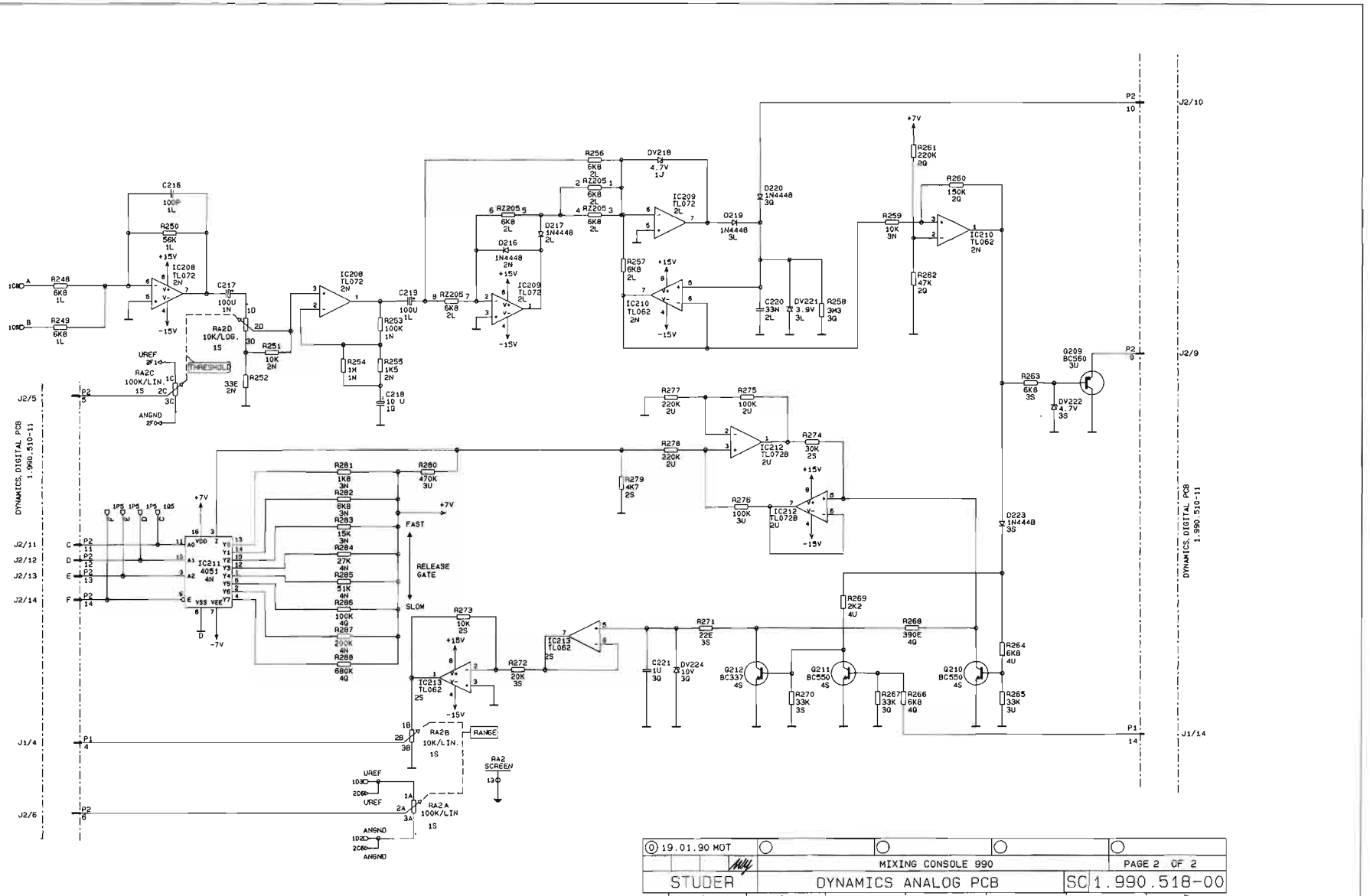
| STUDER REGENSDORF ZÜRICH | DYNAMICS UNIT LIM./COMP./GATE ESE | 1.990.510-00 |
|---|---|---|

DYNAMICS ANALOG PCB 1.990.518.00



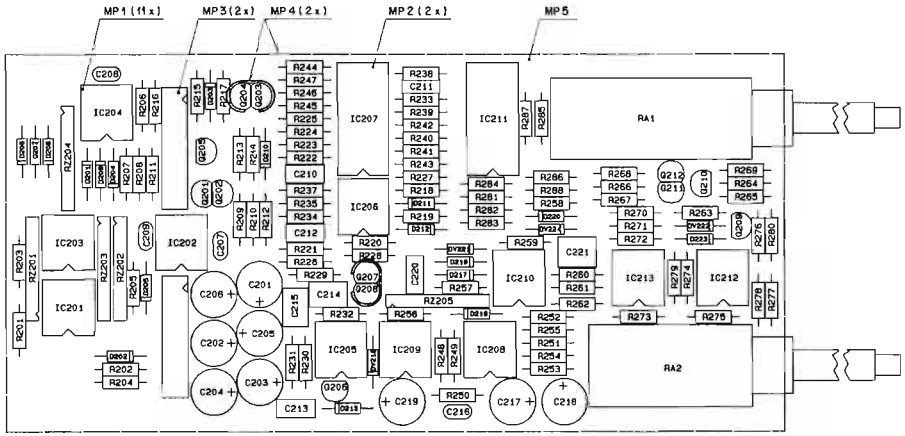

| | | | | |
|---|---|---|---|---|
| 19.01.90 MOT | | | | PAGE 1 OF 2 |
| | | MIXING CONSOLE 990 | | |
| STUDER | DYNAMICS ANALOG PCB | | SC | 1.990.518-00 |

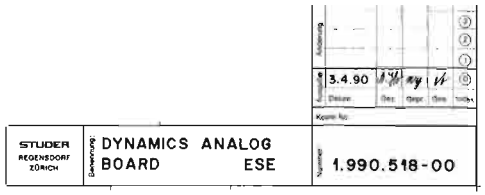
DYNAMICS ANALOG PCB 1.990.518.00



## DYNAMICS ANALOG BOARD ESE

1.990.518.00



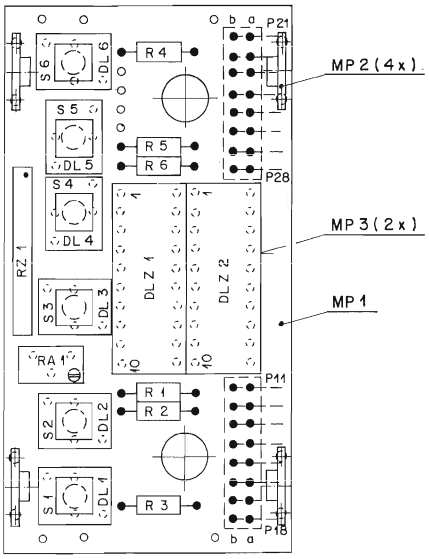

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | | MANUFACTURER |
|---|---|---|---|---|---|---|
| | C...201 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...202 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...203 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...204 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...205 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...206 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...207 | 59.34.4101 | 100 pF | | CER | |
| | C...208 | 59.34.4101 | 100 pF | | CER | |
| | C...209 | 59.34.4101 | 100 pF | | CER | |
| | C...210 | 59.06.5104 | 100 nF | 5% | PE | |
| | C...211 | 59.06.5103 | 10 nF | 5% | PE | |
| | C...212 | 59.06.5104 | 100 nF | 5% | PE | |
| | C...213 | 59.06.5104 | 100 nF | 5% | PE | |
| | C...214 | 59.06.5224 | 220 nF | 5% | PE | |
| | C...215 | 59.06.5474 | 470 nF | 5% | PE | |
| | C...216 | 59.34.4101 | 100 pF | | CER | |
| | C...217 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...218 | 59.22.8100 | 10 uF | 63V | EL | |
| | C...219 | 59.22.5101 | 100 uF | 25V | EL | |
| | C...220 | 59.06.5333 | 33 nF | 5% | PE | |
| | C...221 | 59.06.5105 | 1 uF | 5% | PE | |
| | D...201 | 50.04.0125 | 1N4448 | | | any |
| | D...202 | 50.04.0125 | 1N4448 | | | any |
| | D...203 | 50.04.0125 | 1N4448 | | | any |
| | D...204 | 50.04.0125 | 1N4448 | | | any |
| | D...205 | 50.04.0125 | 1N4448 | | | any |
| | D...206 | 50.04.0125 | 1N4448 | | | any |
| | D...207 | 50.04.0125 | 1N4448 | | | any |
| | D...208 | 50.04.0125 | 1N4448 | | | any |
| | D...209 | 50.04.0125 | 1N4448 | | | any |
| | D...210 | 50.04.0125 | 1N4448 | | | any |
| | D...211 | 50.04.0125 | 1N4448 | | | any |
| | D...212 | 50.04.0125 | 1N4448 | | | any |
| | D...213 | 50.04.0125 | 1N4448 | | | any |
| | D...216 | 50.04.0125 | 1N4448 | | | any |
| | D...217 | 50.04.0125 | 1N4448 | | | any |
| | D...218 | 50.04.1123 | 4.7V | | Z-diode | any |
| | D...219 | 50.04.0125 | 1N4448 | | | any |
| | D...220 | 50.04.0125 | 1N4448 | | | any |
| | D...221 | 50.04.1101 | 3.9V | | Z-diode | any |
| | D...222 | 50.04.1123 | 4.7V | | Z-diode | any |
| | D...223 | 50.04.0125 | 1N4448 | | | any |
| | D...224 | 50.04.1114 | 10V | | Z-diode | any |
| | IC..201 | 50.09.0121 | TL072B | | dual FET-op.amp. | Mot,TI |
| | IC..202 | 50.09.0121 | TL072B | | dual FET-op.amp. | Mot,TI |
| | IC..203 | 50.09.0121 | TL072B | | dual FET-op.amp. | Mot,TI |
| | IC..204 | 50.09.0121 | TL072B | | dual FET-op.amp. | Mot,TI |
| | IC..205 | 50.09.0119 | TL062 | | dual FET-op.amp. | Mot,TI |
| | IC..206 | 50.09.0101 | TL072 | | dual FET-op.amp. | Mot,TI |
| | IC..207 | 50.07.0051 | CD4051 | | 8-channel analog mux/demux | Ph,Mot,RCA |
| | IC..208 | 50.09.0101 | TL072 | | dual FET-op.amp. | Mot,TI |
| | IC..209 | 50.09.0101 | TL072 | | dual FET-op.amp. | Mot,TI |
| | IC..210 | 50.09.0119 | TL062 | | dual FET-op.amp. | Mot,TI |
| | IC..211 | 50.07.0051 | CD4051 | | 8-channel analog mux/demux | Ph,Mot,RCA |
| | IC..212 | 50.09.0121 | TL072B | | dual FET-op.amp. | Mot,TI |
| | IC..213 | 50.09.0119 | TL062 | | dual FET-op.amp. | Mot,TI |
| | MP....1 | 53.03.0166 | 11 pcs | | IC-socket 8 pin | |
| | MP....2 | 53.03.0168 | 2 pcs | | IC-socket 16 pin | |
| | MP....3 | 1.023.391.60 | 2 pcs | | Verbindungskabel mit Stecker 16p | |
| | MP....4 | 50.20.2001 | 2 pcs | | Clip | |
| | MP....5 | 1.990.518.11 | 1 pcs | | PCB | |
| | Q...201 | 50.43.0600 | BC560 | | PNP selected E6310 | ST |
| | Q...202 | 50.43.0600 | BC560 | | PNP selected E6310 | ST |
| | Q...203 | 50.03.0600 | BC560 | | PNP | |
| | Q...204 | 50.03.0497 | BC550 | | NPN | |
| | Q...205 | 50.03.0497 | BC550 | | NPN | |
| | Q...206 | 50.03.0497 | BC550 | | NPN | |
| | Q...207 | 50.43.0600 | BC560 | | PNP selected E6310 | ST |
| | Q...208 | 50.43.0600 | BC560 | | PNP selected E6310 | ST |
| | Q...209 | 50.03.0600 | BC560 | | PNP | |
| | Q...210 | 50.03.0497 | BC550 | | NPN | |
| | Q...211 | 50.03.0497 | BC550 | | NPN | |
| | Q...212 | 50.03.0516 | BC337 | | NPN 800mA | |
| | R...201 | 57.11.3223 | 22 kOhm | | | |
| | R...202 | 57.11.3223 | 22 kOhm | | | |
| | R...203 | 57.11.3223 | 22 kOhm | | | |
| | R...204 | 57.11.3223 | 22 kOhm | | | |
| | R...205 | 57.11.3682 | 6.8 kOhm | | | |
| | R...206 | 57.11.3102 | 1 kOhm | | | |
| | R...207 | 57.11.3102 | 1 kOhm | | | |
| | R...208 | 57.11.3562 | 5.6 kOhm | | (factory selected) | |
| | R...209 | 57.11.3821 | 820 Ohm | | | |
| | R...210 | 57.11.3103 | 10 kOhm | | | |
| | R...211 | 57.11.3273 | 27 kOhm | | | |
| | R...212 | 57.11.3563 | 56 kOhm | | | |
| | R...213 | 57.11.3563 | 56 kOhm | | | |
| | R...214 | . . . | factory selected | | | |
| | R...215 | 57.11.3105 | 1 MOhm | | | |
| | R...216 | 57.11.3333 | 33 kOhm | | | |
| | R...217 | 57.11.3102 | 1 kOhm | | | |
| | R...218 | 57.11.3103 | 10 kOhm | | | |
| | R...219 | 57.11.3684 | 680 kOhm | | | |
| | R...220 | 57.11.3561 | 560 Ohm | | | |
| | R...221 | 57.11.3683 | 68 kOhm | | | |
| | R...222 | 57.11.3223 | 22 kOhm | | | |
| | R...223 | 57.11.3152 | 1.5 kOhm | | | |
| | R...224 | 57.11.3273 | 27 kOhm | | | |
| | R...225 | 57.11.3163 | 16 kOhm | | | |
| | R...226 | 57.11.3473 | 47 kOhm | | | |
| | R...227 | 57.11.3334 | 330 kOhm | | | |
| | R...228 | 57.11.3182 | 1.8 kOhm | | | |
| | R...229 | 57.11.3474 | 470 kOhm | | | |
| | R...230 | 57.11.3224 | 220 kOhm | | | |
| | R...231 | 57.11.3332 | 3.3 kOhm | | | |
| | R...232 | 57.11.3103 | 10 kOhm | | | |
| | R...233 | 57.11.3473 | 47 kOhm | | | |
| | R...234 | . . . | | | | not installed |
| | R...235 | 57.11.3243 | 24 kOhm | | | |
| | R...237 | 57.11.3563 | 56 kOhm | | | |
| | R...238 | 57.11.3102 | 1 kOhm | | | |
| | R...239 | 57.11.3102 | 1 kOhm | | | |
| | R...240 | 57.11.3184 | 180 kOhm | | | |
| | R...241 | 57.11.3823 | 82 kOhm | | | |
| | R...242 | 57.11.3513 | 51 kOhm | | | |
| | R...243 | 57.11.3333 | 33 kOhm | | | |
| | R...244 | 57.11.3223 | 22 kOhm | | | |
| | R...245 | 57.11.3153 | 15 kOhm | | | |
| | R...246 | 57.11.3103 | 10 kOhm | | | |
| | R...247 | 57.11.3000 | 0 Ohm | | | |
| | R...248 | 57.11.3682 | 6.8 kOhm | | | |
| | R...249 | 57.11.3682 | 6.8 kOhm | | | |
| | R...250 | 57.11.3563 | 56 kOhm | | | |
| | R...251 | 57.11.3103 | 10 kOhm | | | |
| | R...252 | 57.11.3330 | 33 Ohm | | | |
| | R...253 | 57.11.3104 | 100 kOhm | | | |
| | R...254 | . . . | | | | not installed |
| | R...255 | 57.11.3152 | 1.5 kOhm | | | |
| | R...256 | 57.11.3682 | 6.8 kOhm | | | |
| | R...257 | 57.11.3682 | 6.8 kOhm | | | |
| | R...258 | 57.11.5335 | 3.3 MOhm | | | |
| | R...259 | 57.11.3103 | 10 kOhm | | | |
| | R...260 | 57.13.3154 | 150 kOhm | | | |
| | R...261 | 57.11.3224 | 220 kOhm | | | |
| | R...262 | 57.11.3473 | 47 kOhm | | | |
| | R...263 | 57.11.3682 | 6.8 kOhm | | | |
| | R...264 | 57.11.3682 | 6.8 kOhm | | | |
| | R...265 | 57.11.3333 | 33 kOhm | | | |
| | R...266 | 57.11.3682 | 6.8 kOhm | | | |
| | R...267 | 57.11.3333 | 33 kOhm | | | |
| | R...268 | 57.11.3391 | 390 Ohm | | | |
| | R...269 | 57.11.3222 | 2.2 kOhm | | | |
| | R...270 | 57.11.3333 | 33 kOhm | | | |
| | R...271 | 57.11.3220 | 22 Ohm | | | |
| | R...272 | 57.11.3203 | 20 kOhm | | | |
| | R...273 | 57.11.3103 | 10 kOhm | | | |
| | R...274 | 57.11.3303 | 30 kOhm | | | |
| | R...275 | 57.11.3104 | 100 kOhm | | | |
| | R...276 | 57.11.3104 | 100 kOhm | | | |
| | R...277 | 57.11.3224 | 220 kOhm | | | |
| | R...278 | 57.11.3224 | 220 kOhm | | | |
| | R...279 | 57.11.3472 | 4.7 kOhm | | | |
| | R...280 | 57.11.3474 | 470 kOhm | | | |
| | R...281 | 57.11.3182 | 1.8 kOhm | | | |
| | R...282 | 57.11.3682 | 6.8 kOhm | | | |
| | R...283 | 57.11.3153 | 15 kOhm | | | |
| | R...284 | 57.11.3273 | 27 kOhm | | | |
| | R...285 | 57.11.3513 | 51 kOhm | | | |
| | R...286 | 57.11.3104 | 100 kOhm | | | |
| | R...287 | 57.11.3204 | 200 kOhm | | | |
| | R...288 | 57.11.3684 | 680 kOhm | | | |
| | RA....1 | 1.010.036.58 | | | | |
| | RA....2 | 1.010.037.58 | | | | |
| | RZ..201 | 57.88.2103 | 4*10kOhm | | | |
| | RZ..202 | 57.88.2682 | 4*6.8kOhm | | | |
| | RZ..203 | 57.88.2682 | 4*6.8kOhm | | | |
| | RZ..204 | 57.88.2682 | 4*6.8kOhm | | | |
| | RZ..205 | 57.88.2682 | 4*6.8kOhm | | | |

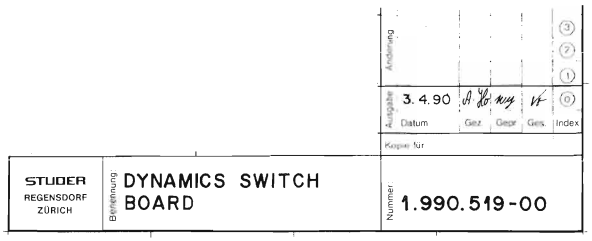
CER = ceramic, El =electrolytic, PE = polyester

MANUFACTURER
Mot=Motorola, Ph=Philips, ST=Studer, TI=Texas Instruments

1.990.518.00 DYNAMICS ANALOGUE BOARD WY 90/01/2500

## DYNAMICS SWITCH BOARD 1.990.519.00



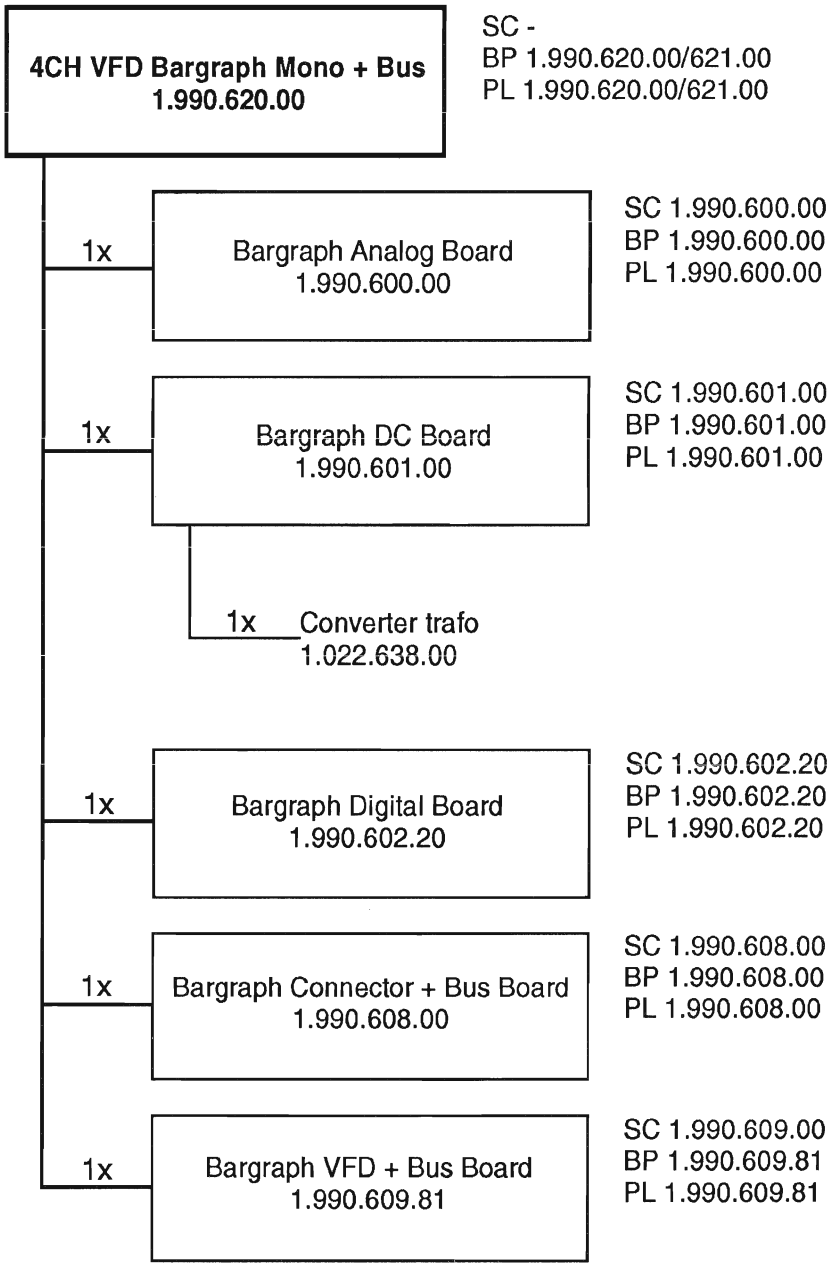




| Ad | ..POS.. | ...REF.No... | | DESCRIPTION..... | .....MANUFACTURER | |
|---|---|---|---|---|---|---|
| | DLZ...1 | 50.04.2161 | | 10*D green | MV54164 (GI) | GI,HP |
| | DLZ...2 | 50.04.2150 | | 10*D red | MV57164 (GI) | GI,HP |
| | R.....1 | 57.11.3101 | 100 Ohm | 0207 MF | | |
| | R.....2 | 57.11.3101 | 100 Ohm | 0207 MF | | |
| | R.....3 | 57.11.3101 | 100 Ohm | 0207 MF | | |
| | R.....4 | 57.11.3101 | 100 Ohm | 0207 MF | | |
| | R.....5 | 57.11.3101 | 100 Ohm | 0207 MF | | |
| | R.....6 | 57.11.3101 | 100 Ohm | 0207 MF | | |
| | RA....1 | 58.05.1104 | 100 kOhm | adjustable | | |
| | RZ....1 | 57.88.4101 | | SIP9 8*100 Ohm | | |
| | S.....1 | 55.15.0622 | | red, LED red | | |
| | S.....2 | 55.15.0604 | | colourless, LED yel | | |
| | S.....3 | 55.15.0604 | | colourless, LED yel | | |
| | S.....4 | 55.15.0602 | | colourless, LED red | | |
| | S.....5 | 55.15.0604 | | colourless, LED yel | | |
| | S.....6 | 55.15.0622 | | red, LED red | | |
| | MP....1 | 1.990.519.11 | 1 pcs | PCB | | |
| | MP....2 | 1.990.100.05 | 4 pcs | Querprinthalter | | |
| | MP....3 | 53.99.0135 | 2 pcs | XIC DIL20P ultra low prof. | | |

MANUFACTURER: GI=General Instruments, HP=Hewlett-Packard

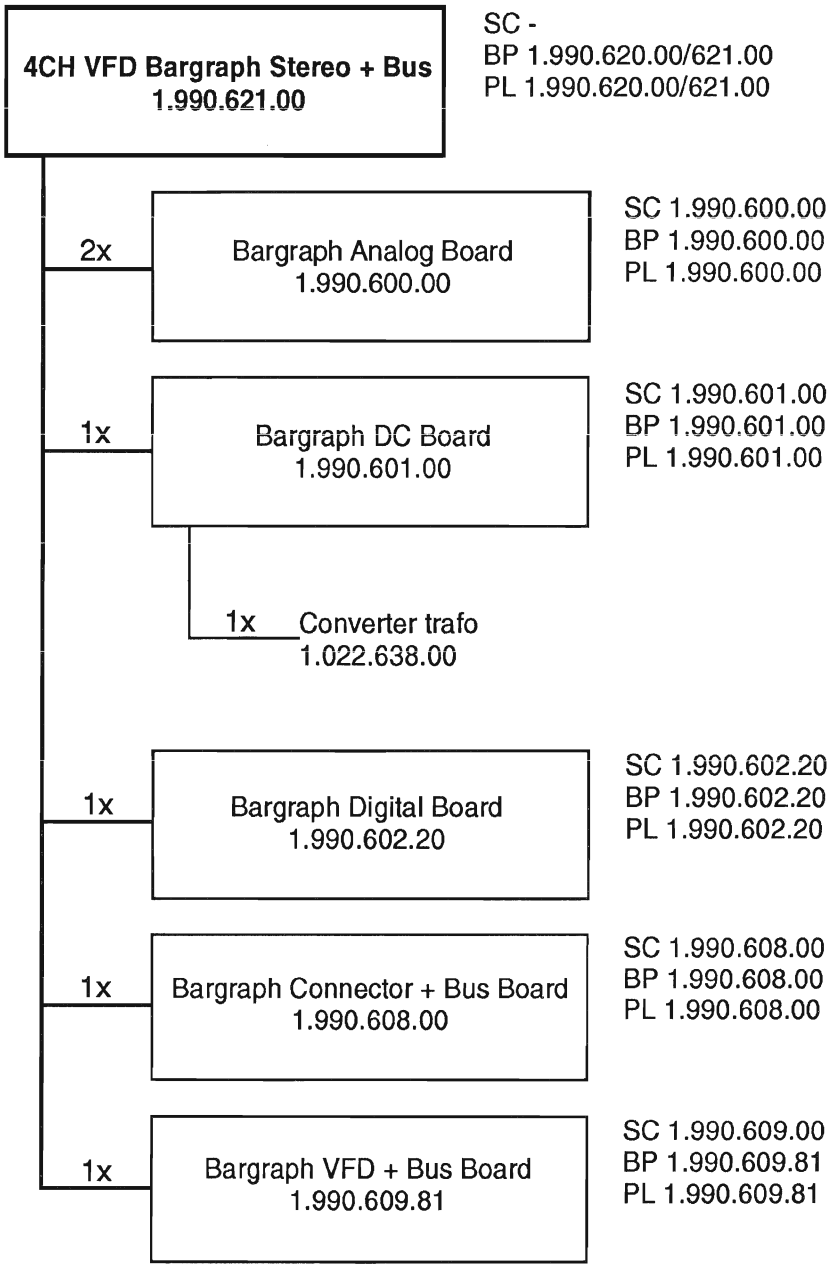
1.990.519.00 DYNAMICS SWITCH BOARD WY 90.01.1000

## 4CH VFD Bargraph Mono + Bus 1.990.620.00



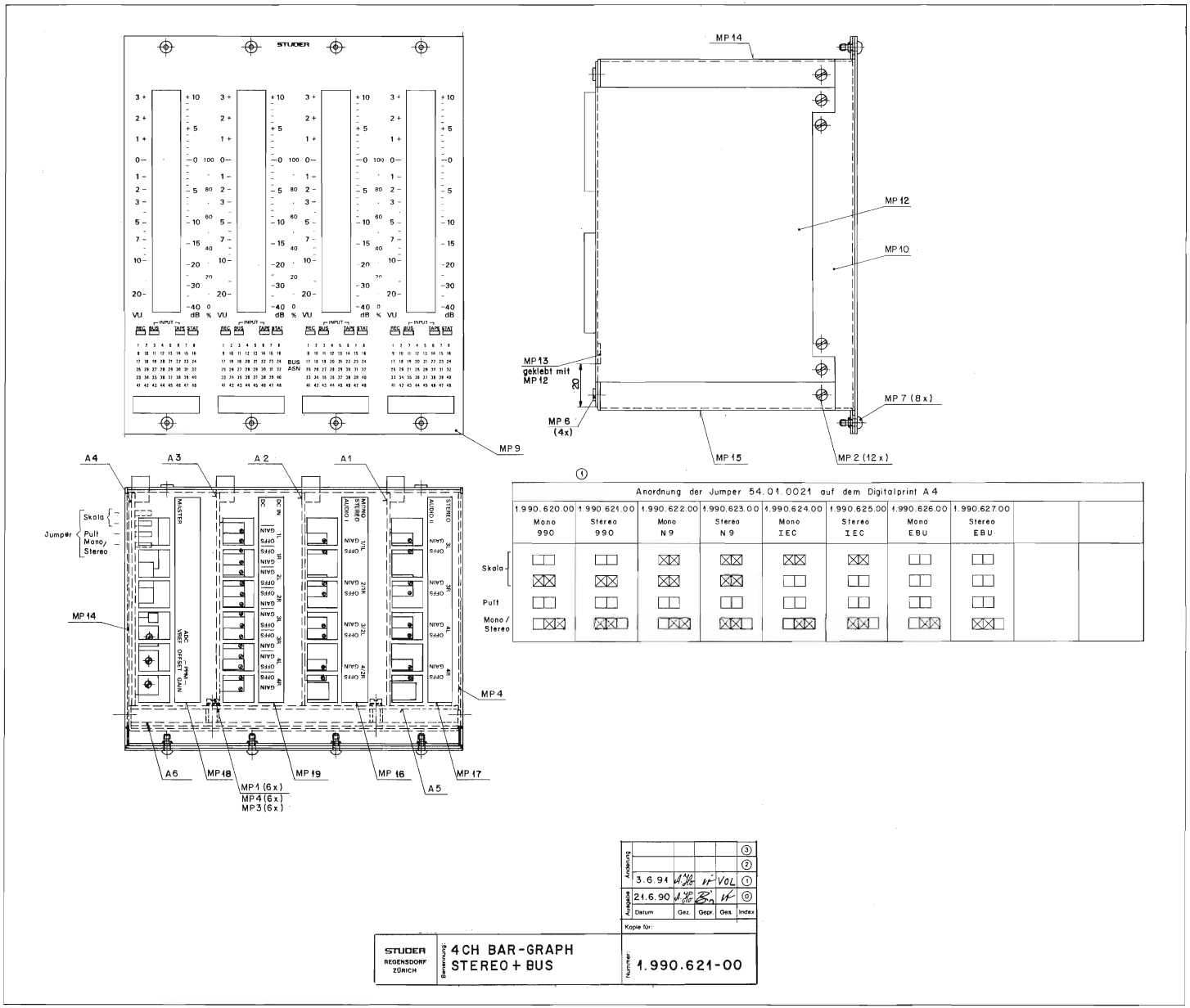

**SC:** Schema Circuit Diagram
**BP:** Bestückungsplan PCB Layout
**PL:** Positionsliste Positional List

## 4CH VFD Bargraph Stereo + Bus 1.990.621.00




**SC:** Schema Circuit Diagram
**BP:** Bestückungsplan PCB Layout
**PL:** Positionsliste Positional List

## 4CH BAR-GRAPH STEREO + BUS 1.990.621.00




① Anordnung der Jumper 54.01.0021 auf dem Digitalprint A4

| | 1.990.620.00 Mono 990 | 1.990.621.00 Stereo 990 | 1.990.622.00 Mono N9 | 1.990.623.00 Stereo N9 | 1.990.624.00 Mono IEC | 1.990.625.00 Stereo IEC | 1.990.626.00 Mono EBU | 1.990.627.00 Stereo EBU |
|---|---|---|---|---|---|---|---|---|
| Skala | | | | | | | | |
| Pult | | | | | | | | |
| Mono / Stereo | | | | | | | | |

| Änderung | | | | | |
|---|---|---|---|---|---|
| | | | | | ③ |
| | | | | | ② |
| | 3.6.94 | | | VOL | ① |
| Ausgabe | 21.6.90 | | | | ⓪ |
| | Datum | Gez. | Gepr. | Ges. | Index |

Kopie für:

| STUDER REGENSDORF ZÜRICH | Benennung: 4CH BAR-GRAPH STEREO + BUS | Nummer: 1.990.621-00 |
|---|---|---|

| Ad | ..POS.. | ...REF.No... | | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|---|
| | A.....1 | . . 0 | | not used | |
| | A.....2 | 1.990.600.00 | | Bar-Graph Analog Board | St |
| | A.....3 | 1.990.601.00 | | Bar-Graph DC Board | St |
| 04 | A.....4 | 1.990.602.21 | | Bar-Graph Digital Board | St |
| | A.....5 | 1.990.608.00 | | Bar-Graph Connector+Bus Board | St |
| 02 | A.....6 | 1.990.609.81 | | Bar-Graph VFD+Bus Board | St |
| | MP....1 | 21.01.0353 | 0006 pcs | Z-Schr. , ZN , M3 * 5 | |
| | MP....2 | 21.01.2352 | 0012 pcs | S-Schr. , ZN , M3 * 4 | |
| 01 | MP....3 | 23.01.1032 | 0006 pcs | U-Scheibe D 3.2/6 * 0.5 | |
| 01 | MP....4 | 24.16.1030 | 0006 pcs | Rippenscheibe D 3.2/5.5 | |
| | MP....5 | . . . 0 | | not exist | |
| | MP....6 | 28.31.0005 | 0004 pcs | Blindniete D 3.2 * 6.1 | |
| | MP....7 | 1.010.022.21 | 0008 pcs | Linsenschraube IS spez. M3 * 8 sw | |
| | MP....8 | 1.010.080.43 | 0001 pcs | Software Version Schild | |
| | MP....9 | 1.990.620.01 | 0001 pcs | Frontschild 1 VFD Bar-Graph + Bus | |
| | MP...10 | 1.990.620.02 | 0001 pcs | Traeger VFD Bar-Graph + Bus | |
| | MP...11 | 1.990.620.04 | 0000 pcs | Studer-Nr.-Etikette 10 * 20 | |
| | MP...12 | 1.990.620.05 | 0001 pcs | Mantel VFD Bar-Graph + Bus | |
| | MP...13 | 1.990.620.06 | 0001 pcs | Distanzstreifen | |
| | MP...14 | 1.990.620.08 | 0002 pcs | Isolation Mantel VFD Bar-Graph | |
| | MP...15 | 1.990.620.09 | 0002 pcs | Stirnmantel VFD Bar-Graph | |
| | MP...16 | 1.990.620.21 | 0001 pcs | Schild Potm. Beschr. AUDIO 1 | |
| | MP...17 | . . . 0 | | not exist | |
| | MP...18 | 1.990.620.23 | 0001 pcs | Schild Potm. Beschr. MASTER | |
| | MP...19 | 1.990.620.24 | 0001 pcs | Schild Potm. Beschr. DC | |
| 03 | MP...20 | 54.01.0021 | 0002 pcs | Jumper Bruecke | |

Index 1: U-Scheiben und Rippenscheiben dazu.

Index 2: Aenderung von 1.990.609.00 nach 1.990.609.81

Index 3: Uebertragung der Jumperbruecken von 1.990.602.20

Index 4: 1.990.602.21 neue SW

MANUFACTURER St=Studer

| | | |
|---|---|---|
| 1.990.620.00 | 4CH BAR-GRAPH MONO+BUS (990) | V0L90/02/0600 |
| 1.990.620.00 | 4CH BAR-GRAPH MONO+BUS (990) | V0L90/05/0801 |
| 1.990.620.00 | 4CH BAR-GRAPH MONO+BUS (990) | V0L90/06/2702 |
| 1.990.620.00 | 4CH BAR-GRAPH MONO+BUS (990) | V0L91/06/2603 |
| 1.990.620.00 | 4CH BAR-GRAPH MONO+BUS (990) | FRI94/04/2804 |

| Ad | ..POS.. | ...REF.No... | | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|---|
| | A.....1 | 1.990.600.00 | | Bar-Graph Analog Board | St |
| | A.....2 | 1.990.600.00 | | Bar-Graph Analog Board | St |
| | A.....3 | 1.990.601.00 | | Bar-Graph DC Board | St |
| 04 | A.....4 | 1.990.602.21 | | Bar-Graph Digital Board | St |
| | A.....5 | 1.990.608.00 | | Bar-Graph Connector+Bus Board | St |
| 02 | A.....6 | 1.990.609.81 | | Bar-Graph VFD+Bus Board | St |
| | MP....1 | 21.01.0353 | 0006 pcs | Z-Schr. , ZN , M3 * 5 | |
| | MP....2 | 21.01.2352 | 0012 pcs | S-Schr. , ZN , M3 * 4 | |
| 01 | MP....3 | 23.01.1032 | 0006 pcs | U-Scheibe D 3.2/6 * 0.5 | |
| 01 | MP....4 | 24.16.1030 | 0006 pcs | Rippenscheibe D 3.2/5.5 | |
| | MP....5 | . . . 0 | | not exist | |
| | MP....6 | 28.31.0005 | 0004 pcs | Blindniete D 3.2 * 6.1 | |
| | MP....7 | 1.010.022.21 | 0008 pcs | Linsenschraube IS spez. M3 * 8 sw | |
| | MP....8 | 1.010.080.43 | 0001 pcs | Software Version Schild | |
| | MP....9 | 1.990.620.01 | 0001 pcs | Frontschild 1 VFD Bar-Graph + Bus | |
| | MP...10 | 1.990.620.02 | 0001 pcs | Traeger VFD Bar-Graph + Bus | |
| | MP...11 | 1.990.621.04 | 0000 pcs | Studer-Nr.-Etikette 10 * 20 | |
| | MP...12 | 1.990.620.05 | 0001 pcs | Mantel VFD Bar-Graph + Bus | |
| | MP...13 | 1.990.620.06 | 0001 pcs | Distanzstreifen | |
| | MP...14 | 1.990.620.08 | 0002 pcs | Isolation Mantel VFD Bar-Graph | |
| | MP...15 | 1.990.620.09 | 0002 pcs | Stirnmantel VFD Bar-Graph | |
| | MP...16 | 1.990.620.21 | 0001 pcs | Schild Potm. Beschr. AUDIO 1 | |
| | MP...17 | 1.990.620.22 | 0001 pcs | Schild Potm. Beschr. AUDIO 2 | |
| | MP...18 | 1.990.620.23 | 0001 pcs | Schild Potm. Beschr. MASTER | |
| | MP...19 | 1.990.620.24 | 0001 pcs | Schild Potm. Beschr. DC | |
| 03 | MP...20 | 54.01.0021 | 0002 pcs | Jumper Bruecke | |

Index 1: U-Scheiben und Rippenscheiben dazu.

Index 2: Aenderung von 1.990.609.00 nach 1.990.609.81

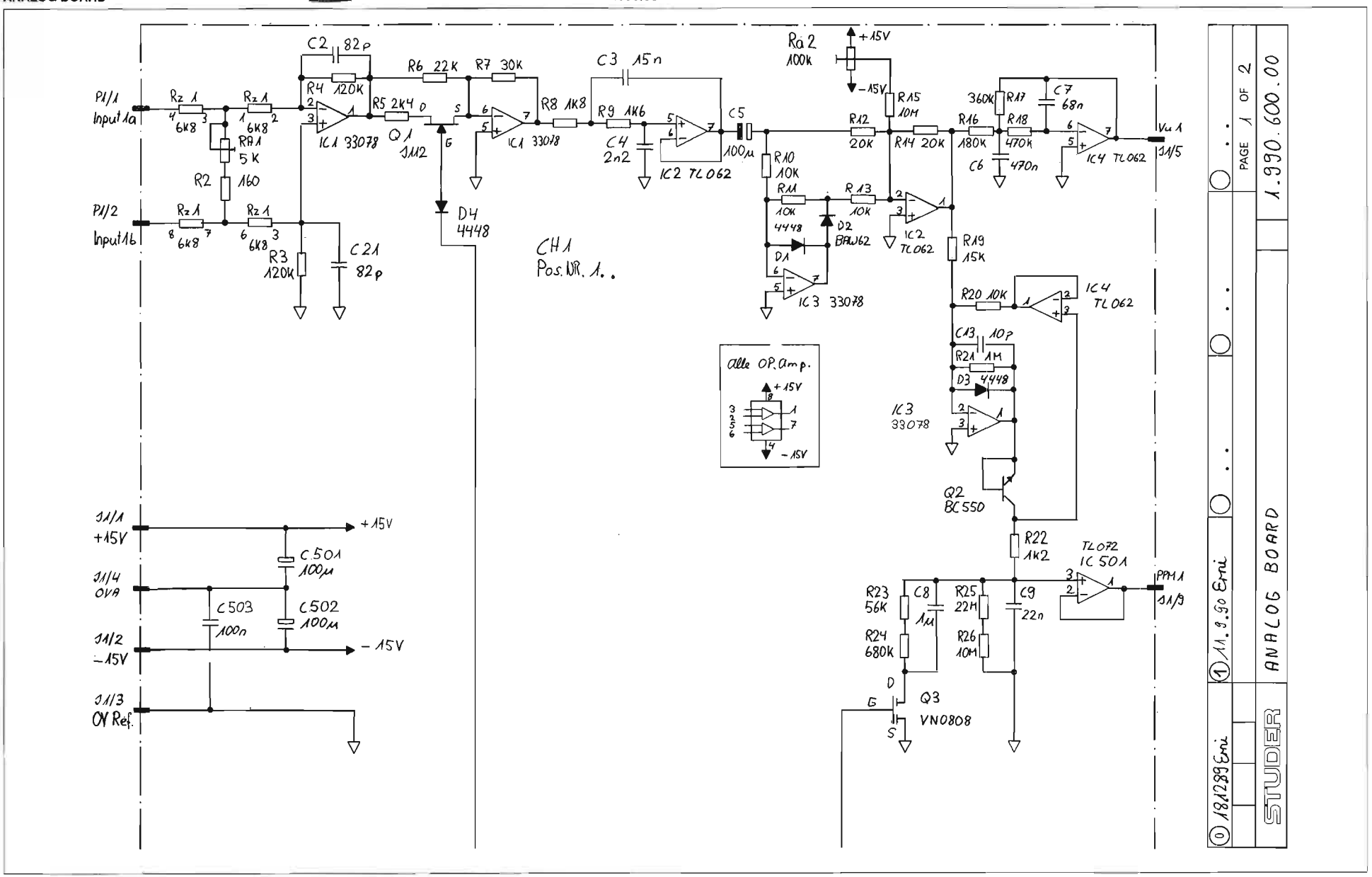
Index 3: Uebertragung der Jumperbruecken von 1.990.602.20

Index 4: 1.990.602.21 neue SW

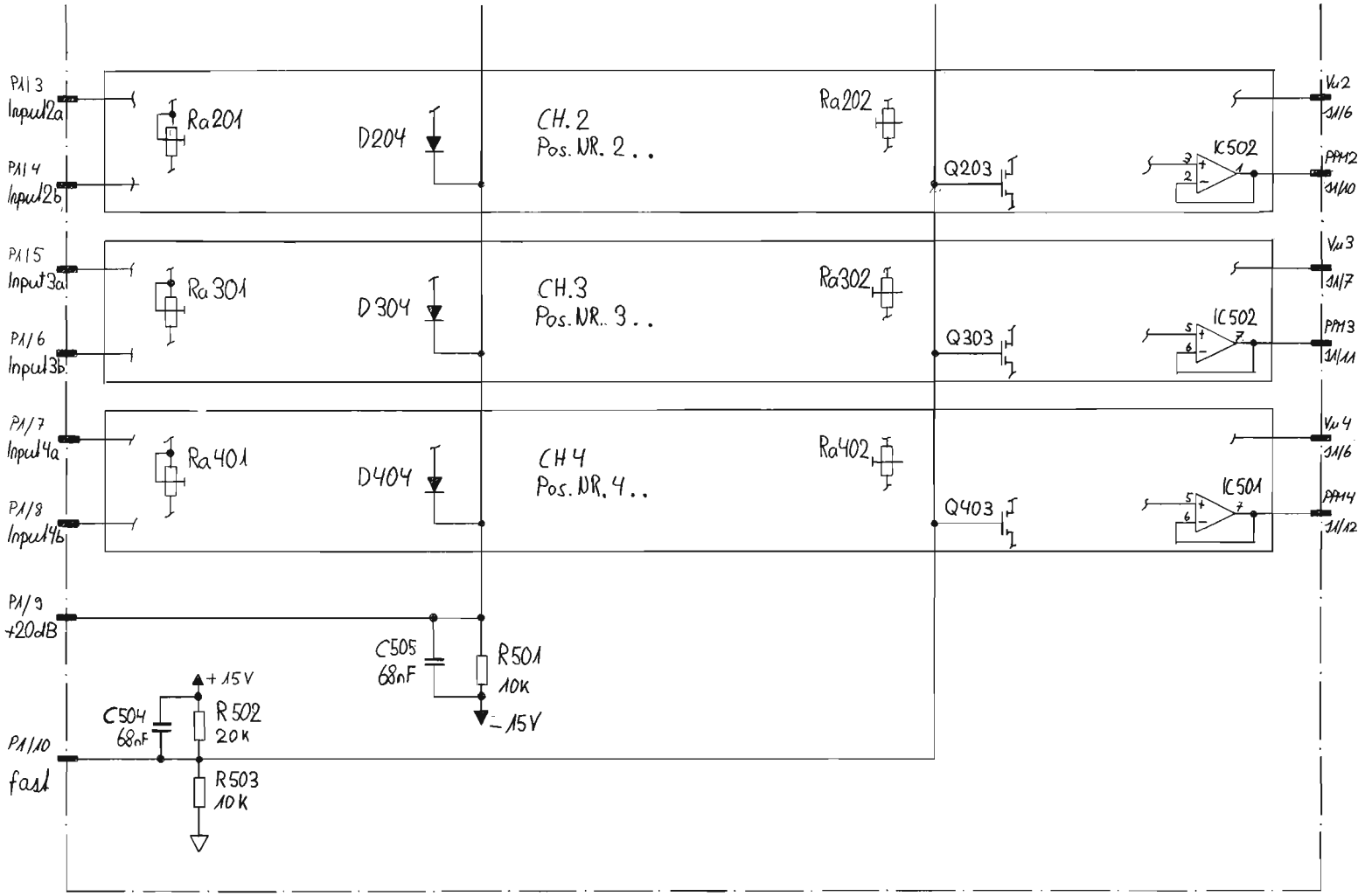
MANUFACTURER St=Studer

| | | |
|---|---|---|
| 1.990.621.00 | 4CH BAR-GRAPH STEREO+BUS (990) | V0L90/02/0600 |
| 1.990.621.00 | 4CH BAR-GRAPH STEREO+BUS (990) | V0L90/05/0801 |
| 1.990.621.00 | 4CH BAR-GRAPH STEREO+BUS (990) | V0L90/06/2702 |
| 1.990.621.00 | 4CH BAR-GRAPH STEREO+BUS (990) | V0L91/06/2603 |
| 1.990.621.00 | 4CH BAR-GRAPH STEREO+BUS (990) | FRI94/04/2804 |

ANALOG BOARD 1.990.600.00

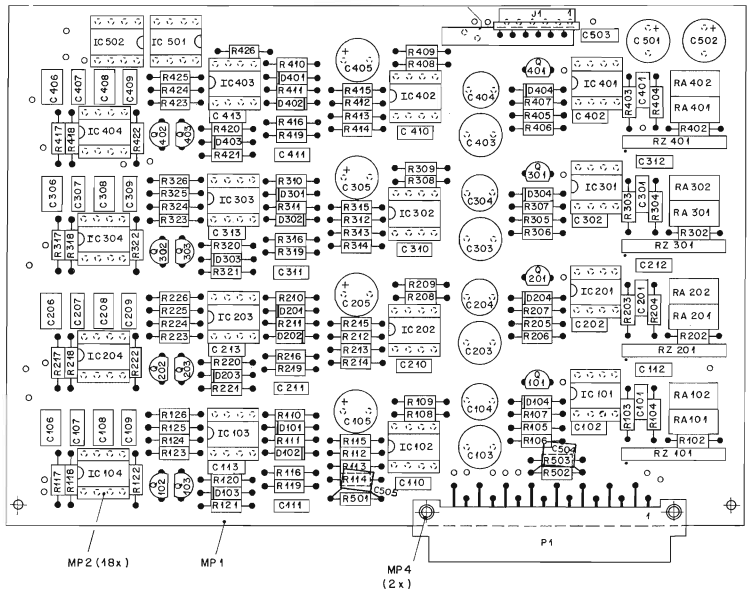


ANALOG BOARD 1.990.600.00



## BAR-GRAPH ANALOG BOARD ESE

1.990.600.00




| Ausgabe | Änderung | |
|---|---|---|
| 11.9.90 | | ① |
| 13.90 | | ② |
| Datum | Gez. Gepr. Ges. | Index |

Kopie Nr:

| | | |
|---|---|---|
| STUDER REGENSDORF ZÜRICH | Benennung: BARGRAPH ANALOG BOARD ESE | Nummer: 1.990.600-00 |

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | MANUFACTURER |
|---|---|---|---|---|---|
| | C...101 | 59.34.4820 | 82 pF | | CER |
| | C...102 | 59.34.4820 | 82 pF | | CER |
| | C...103 | 59.05.1153 | 15 nF | | PE 1% |
| | C...104 | 59.05.1222 | 2.2 nF | | PE 1% |
| | C...105 | 59.22.5101 | 100 uF | | EL |
| | C...106 | 59.06.5474 | 470 nF | | PE 5% |
| | C...107 | 59.06.5683 | 68 nF | | PE 5% |
| | C...108 | 59.06.5105 | 1 uF | | PE 5% |
| | C...109 | 59.06.5223 | 22 nF | | PE 5% |
| | C...110 | 59.06.5104 | 100 nF | | PE 5% |
| | C...111 | 59.06.5104 | 100 nF | | PE 5% |
| | C...112 | 59.06.5104 | 100 nF | | PE 5% |
| | C...113 | 59.34.1100 | 10 pF | | CER |
| | C...201 | 59.34.4820 | 82 pF | | CER |
| | C...202 | 59.34.4820 | 82 pF | | CER |
| | C...203 | 59.05.1153 | 15 nF | | PE 1% |
| | C...204 | 59.05.1222 | 2.2 nF | | PE 1% |
| | C...205 | 59.22.5101 | 100 uF | | EL |
| | C...206 | 59.06.5474 | 470 nF | | PE 5% |
| | C...207 | 59.06.5683 | 68 nF | | PE 5% |
| | C...208 | 59.06.5105 | 1 uF | | PE 5% |
| | C...209 | 59.06.5223 | 22 nF | | PE 5% |
| | C...210 | 59.06.5104 | 100 nF | | PE 5% |
| | C...211 | 59.06.5104 | 100 nF | | PE 5% |
| | C...212 | 59.06.5104 | 100 nF | | PE 5% |
| | C...213 | 59.34.1100 | 10 pF | | CER |
| | C...301 | 59.34.4820 | 82 pF | | CER |
| | C...302 | 59.34.4820 | 82 pF | | CER |
| | C...303 | 59.05.1153 | 15 nF | | PE 1% |
| | C...304 | 59.05.1222 | 2.2 nF | | PE 1% |
| | C...305 | 59.22.5101 | 100 uF | | EL |
| | C...306 | 59.06.5474 | 470 nF | | PE 5% |
| | C...307 | 59.06.5683 | 68 nF | | PE 5% |
| | C...308 | 59.06.5105 | 1 uF | | PE 5% |
| | C...309 | 59.06.5223 | 22 nF | | PE 5% |
| | C...310 | 59.06.5104 | 100 nF | | PE 5% |
| | C...311 | 59.06.5104 | 100 nF | | PE 5% |
| | C...312 | 59.06.5104 | 100 nF | | PE 5% |
| | C...313 | 59.34.1100 | 10 pF | | CER |
| | C...401 | 59.34.4820 | 82 pF | | CER |
| | C...402 | 59.34.4820 | 82 pF | | CER |
| | C...403 | 59.06.1153 | 15 nF | | PE 1% |
| | C...404 | 59.05.1222 | 2.2 nF | | PE 1% |
| | C...405 | 59.22.5101 | 100 uF | | EL |
| | C...406 | 59.06.5474 | 470 nF | | PE 5% |
| | C...407 | 59.06.5683 | 68 nF | | PE 5% |
| | C...408 | 59.06.5105 | 1 uF | | PE 5% |
| | C...409 | 59.06.5223 | 22 nF | | PE 5% |
| | C...410 | 59.06.5104 | 100 nF | | PE 5% |
| | C...411 | 59.06.5104 | 100 nF | | PE 5% |
| | C...413 | 59.34.1100 | 10 pF | | CER |
| | C...501 | 59.22.5101 | 100 uF | | EL |
| | C...502 | 59.22.5101 | 100 uF | | EL |
| | C...503 | 59.06.5104 | 100 nF | | PE 5% |
| 01 | C...504 | 59.06.5683 | 68 nF | | PE 5% |
| 01 | C...505 | 59.06.5683 | 68 nF | | PE 5% |
| | D...101 | 50.04.0125 | 1N4448 | | |
| | D...102 | 50.04.0132 | BAW 62 | | |
| | D...103 | 50.04.0125 | 1N4448 | | |
| | D...104 | 50.04.0125 | 1N4448 | | |
| | D...201 | 50.04.0125 | 1N4448 | | |
| | D...202 | 50.04.0132 | BAW 62 | | |
| | D...203 | 50.04.0125 | 1N4448 | | |
| | D...204 | 50.04.0125 | 1N4448 | | |

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | MANUFACTURER |
|---|---|---|---|---|---|
| | D...301 | 50.04.0125 | 1N4448 | | |
| | D...302 | 50.04.0132 | BAW 62 | | |
| | D...303 | 50.04.0125 | 1N4448 | | |
| | D...304 | 50.04.0125 | 1N4448 | | |
| | D...401 | 50.04.0125 | 1N4448 | | |
| | D...402 | 50.04.0132 | BAW 62 | | |
| | D...403 | 50.04.0125 | 1N4448 | | |
| | D...404 | 50.04.0125 | 1N4448 | | |
| | IC..101 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..102 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..103 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..104 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..201 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..202 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..203 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..204 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..301 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..302 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..303 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..304 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..401 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..402 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..403 | 50.09.0117 | MC33078P | dual op. amp. | Motorola |
| | IC..404 | 50.09.0119 | TL 062 | dual op. amp. | Ti,Tho |
| | IC..501 | 50.09.0121 | TL 072 | dual op. amp. | Ti,Tho |
| | IC..502 | 50.09.0121 | TL 072 | dual op. amp. | Ti,Tho |
| | J.....1 | 54.14.5532 | | 12 Pol. Micro Match (Stecker) | |
| | P.....1 | 54.11.2007 | | 16 Pol. Euro (Stecker) | |
| | Q...101 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...102 | 50.03.0497 | BC 550 | NPN | any |
| | Q...103 | 50.03.1505 | VN0808 | V-MosFET | Fe,Six |
| | Q...201 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...202 | 50.03.0497 | BC 550 | NPN | any |
| | Q...203 | 50.03.1505 | VN0808 | V-MosFET | Fe,Six |
| | Q...301 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...302 | 50.03.0497 | BC 550 | NPN | any |
| | Q...303 | 50.03.1505 | VN0808 | V-MosFET | Fe,Six |
| | Q...401 | 50.03.0350 | J 112 | N-JFET | NS,Mot,Six |
| | Q...402 | 50.03.0497 | BC 550 | NPN | any |
| | Q...403 | 50.03.1505 | VN0808 | V-MosFET | Fe,Six |
| | R...102 | 57.11.3161 | 160 Ohm | 1% 0.25W MF | |
| | R...103 | 57.11.3124 | 120 KOhm | 1% 0.25W MF | |
| | R...104 | 57.11.3124 | 120 kOhm | 1% 0.25W MF | |
| | R...105 | 57.11.3242 | 2.4 kOhm | 1% 0.25W MF | |
| | R...106 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R...107 | 57.11.3303 | 30 kOhm | 1% 0.25W MF | |
| | R...108 | 57.11.3132 | 1.3 kOhm | 1% 0.25W MF | |
| | R...109 | 57.11.3162 | 1.6 kOhm | 1% 0.25W MF | |
| | R...110 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...111 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...112 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...113 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...114 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...115 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...116 | 57.11.3184 | 180 kOhm | 1% 0.25W MF | |
| | R...117 | 57.11.3364 | 360 kOhm | 1% 0.25W MF | |
| | R...118 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| | R...119 | 57.11.3153 | 15 kOhm | 1% 0.25W MF | |
| | R...120 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...121 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |
| | R...122 | 57.11.3122 | 1.2 kOhm | 1% 0.25W MF | |
| | R...123 | 57.11.3563 | 56 kOhm | 1% 0.25W MF | |
| | R...124 | 57.11.3684 | 680 kOhm | 1% 0.25W MF | |
| | R...125 | 57.11.6226 | 22 MOhm | 5% 0.25W MF | |
| | R...126 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...202 | 57.11.3161 | 160 Ohm | 1% 0.25W MF | |
| | R...203 | 57.11.3124 | 120 KOhm | 1% 0.25W MF | |
| | R...204 | 57.11.3124 | 120 kOhm | 1% 0.25W MF | |
| | R...205 | 57.11.3242 | 2.4 kOhm | 1% 0.25W MF | |
| | R...206 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R...207 | 57.11.3303 | 30 kOhm | 1% 0.25W MF | |
| | R...208 | 57.11.3132 | 1.3 kOhm | 1% 0.25W MF | |
| | R...209 | 57.11.3162 | 1.6 kOhm | 1% 0.25W MF | |
| | R...210 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...211 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...212 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...213 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...214 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...215 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...216 | 57.11.3184 | 180 kOhm | 1% 0.25W MF | |
| | R...217 | 57.11.3364 | 360 kOhm | 1% 0.25W MF | |
| | R...218 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| | R...219 | 57.11.3153 | 15 kOhm | 1% 0.25W MF | |
| | R...220 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...221 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |
| | R...222 | 57.11.3122 | 1.2 kOhm | 1% 0.25W MF | |
| | R...223 | 57.11.3563 | 56 kOhm | 1% 0.25W MF | |
| | R...224 | 57.11.3684 | 680 kOhm | 1% 0.25W MF | |

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | MANUFACTURER |
|---|---|---|---|---|---|
| | R...225 | 57.11.6226 | 22 MOhm | 5% 0.25W MF | |
| | R...226 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...302 | 57.11.3161 | 160 Ohm | 1% 0.25W MF | |
| | R...303 | 57.11.3124 | 120 KOhm | 1% 0.25W MF | |
| | R...304 | 57.11.3124 | 120 kOhm | 1% 0.25W MF | |
| | R...305 | 57.11.3242 | 2.4 kOhm | 1% 0.25W MF | |
| | R...306 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R...307 | 57.11.3303 | 30 kOhm | 1% 0.25W MF | |
| | R...308 | 57.11.3132 | 1.3 kOhm | 1% 0.25W MF | |
| | R...309 | 57.11.3162 | 1.6 kOhm | 1% 0.25W MF | |
| | R...310 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...311 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...312 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...313 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...314 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...315 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...316 | 57.11.3184 | 180 kOhm | 1% 0.25W MF | |
| | R...317 | 57.11.3364 | 360 kOhm | 1% 0.25W MF | |
| | R...318 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| | R...319 | 57.11.3153 | 15 kOhm | 1% 0.25W MF | |
| | R...320 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...321 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |
| | R...322 | 57.11.3122 | 1.2 kOhm | 1% 0.25W MF | |
| | R...323 | 57.11.3563 | 56 kOhm | 1% 0.25W MF | |
| | R...324 | 57.11.3684 | 680 kOhm | 1% 0.25W MF | |
| | R...325 | 57.11.6226 | 22 MOhm | 5% 0.25W MF | |
| | R...326 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...402 | 57.11.3161 | 160 Ohm | 1% 0.25W MF | |
| | R...403 | 57.11.3124 | 120 KOhm | 1% 0.25W MF | |
| | R...404 | 57.11.3124 | 120 kOhm | 1% 0.25W MF | |
| | R...405 | 57.11.3242 | 2.4 kOhm | 1% 0.25W MF | |
| | R...406 | 57.11.3223 | 22 kOhm | 1% 0.25W MF | |
| | R...407 | 57.11.3303 | 30 kOhm | 1% 0.25W MF | |
| | R...408 | 57.11.3132 | 1.3 kOhm | 1% 0.25W MF | |
| | R...409 | 57.11.3162 | 1.6 kOhm | 1% 0.25W MF | |
| | R...410 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...411 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...412 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...413 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...414 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...415 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...416 | 57.11.3184 | 180 kOhm | 1% 0.25W MF | |
| | R...417 | 57.11.3364 | 360 kOhm | 1% 0.25W MF | |
| | R...418 | 57.11.3474 | 470 kOhm | 1% 0.25W MF | |
| | R...419 | 57.11.3153 | 15 kOhm | 1% 0.25W MF | |
| | R...420 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...421 | 57.11.3105 | 1 MOhm | 5% 0.25W MF | |
| | R...422 | 57.11.3122 | 1.2 kOhm | 1% 0.25W MF | |
| | R...423 | 57.11.3563 | 56 kOhm | 1% 0.25W MF | |
| | R...424 | 57.11.3684 | 680 kOhm | 1% 0.25W MF | |
| | R...425 | 57.11.6226 | 22 MOhm | 5% 0.25W MF | |
| | R...426 | 57.11.5106 | 10 MOhm | 5% 0.25W MF | |
| | R...501 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | R...502 | 57.11.3203 | 20 kOhm | 1% 0.25W MF | |
| | R...503 | 57.11.3103 | 10 kOhm | 1% 0.25W MF | |
| | RA..101 | 58.05.0502 | 5 kOhm | 10% Cermet 22 Umdrehungen | |
| | RA..102 | 58.05.0104 | 100 kOhm | 10% Cermet 22 Umdrehungen | |
| | RA..201 | 58.05.0502 | 5 kOhm | 10% Cermet 22 Umdrehungen | |
| | RA..202 | 58.05.0104 | 100 kOhm | 10% Cermet 22 Umdrehungen | |
| | RA..301 | 58.05.0502 | 5 kOhm | 10% Cermet 22 Umdrehungen | |
| | RA..302 | 58.05.0104 | 100 kOhm | 10% Cermet 22 Umdrehungen | |
| | RA..401 | 58.05.0502 | 5 kOhm | 10% Cermet 22 Umdrehungen | |
| | RA..402 | 58.05.0104 | 100 kOhm | 10% Cermet 22 Umdrehungen | |
| | RZ..101 | 57.88.2682 | 6.8 kOhm | 5% resistor network | |
| | RZ..201 | 57.88.2682 | 6.8 kOhm | 5% resistor network | |
| | RZ..301 | 57.88.2682 | 6.8 kOhm | 5% resistor network | |
| | RZ..401 | 57.88.2682 | 6.8 kOhm | 5% resistor network | |

| | | | | |
|---|---|---|---|---|
| MP....1 | 1.990.600.11 | 0001 pcs | Bar-Graph Analog PCB | Studer |
| MP....2 | 53.03.0166 | 0018 pcs | IC-Socket, DIL 8 | |
| MP....3 | 43.01.0108 | 0001 pcs | Ese Schild | |
| MP....4 | 28.99.0119 | 0002 pcs | Niete Ø2.5*9*0.15 | |
| MP....5 | 1.990.600.04 | 0000 pcs | Nummerettiket | |
| MP....6 | 1.990.600.01 | 0001 pcs | Isolierunterlage Micro Match | |

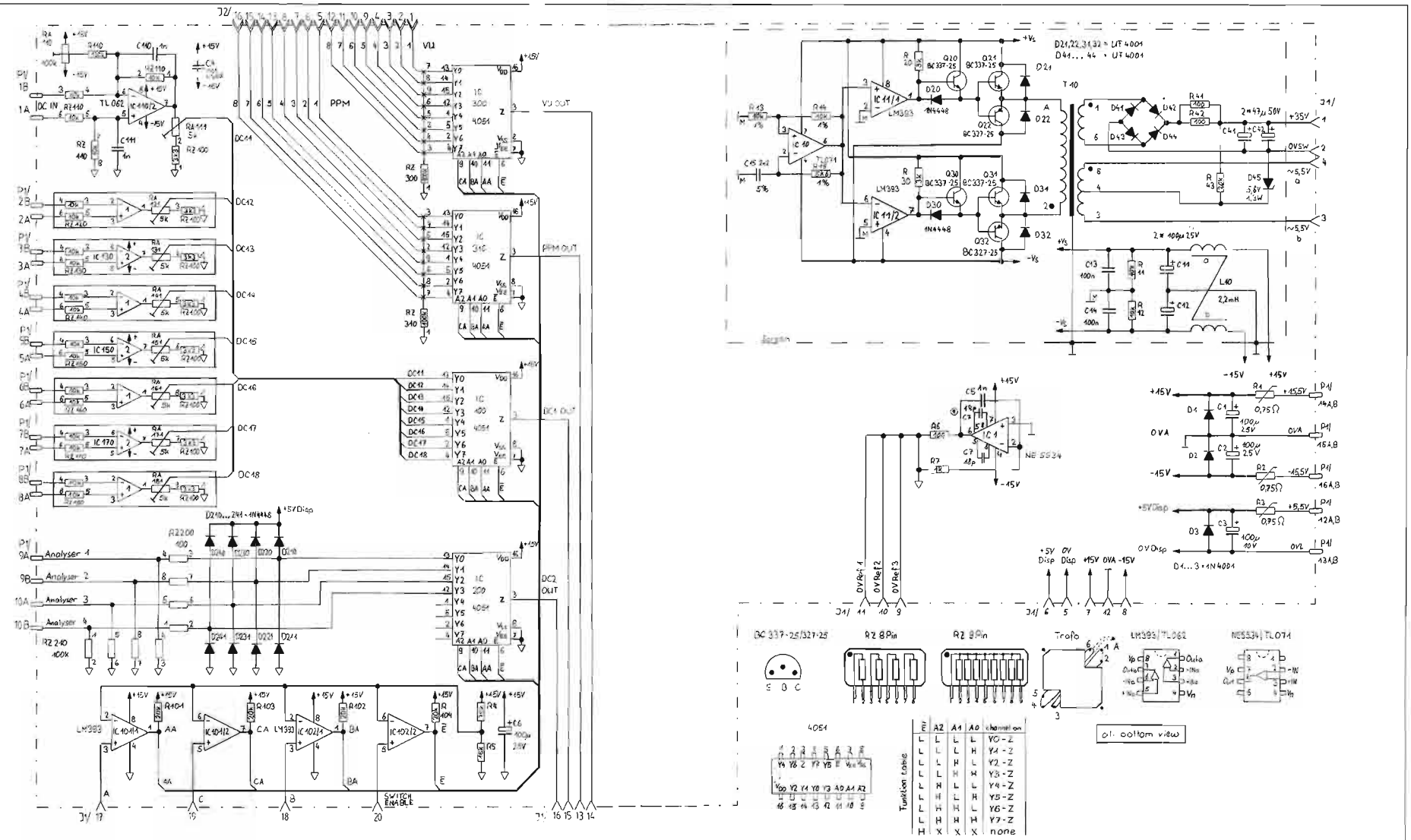
CER=Ceramic, EL =Elektrolyt
MF =Metal Film, PE =Polyesterfolien

MANUFACTURER :
Fe =Ferranti
NE =Nippon Electronic Corp.
NS =National Semiconductors
Ra =Raytheon
Six=Siliconix
Tho=Thomson
Ti =Texas Instrument

| | | |
|---|---|---|
| 1.990.600.00 | BAR-GRAPH ANALOG BOARD | SE 89/06/0600 |
| 1.990.600.00 | BAR-GRAPH ANALOG BOARD | SE 90/09/1101 |

## BAR-GRAPH DC BOARD

1.990.601.00

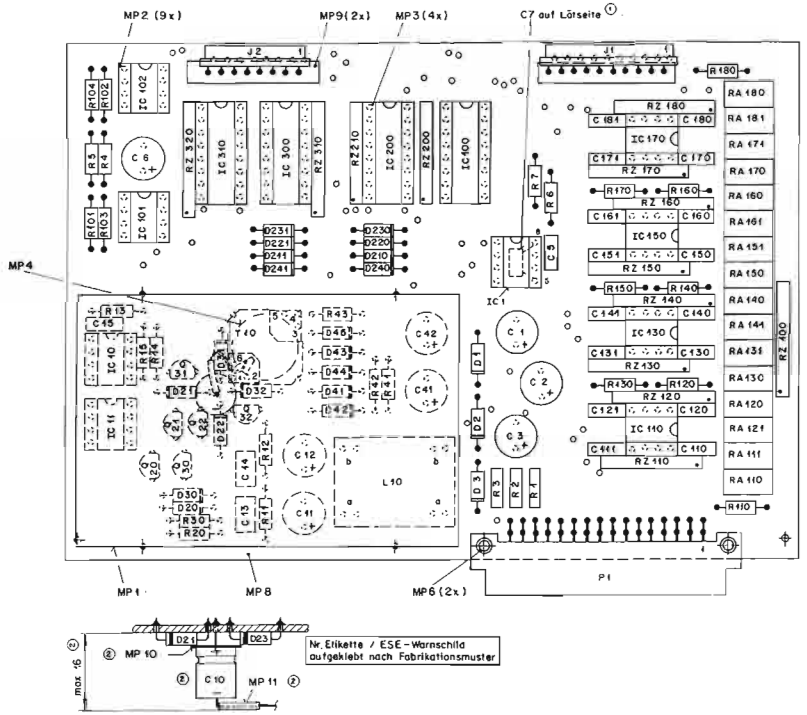



| | | | | | |
|---|---|---|---|---|---|
| 0 23.1.90 CEstermann | 1 26.01.90 CEstermann | 2 4.9.90 VOL | | | |
| | | | | PAGE 1 OF 2 | |
| STUDER | BAR-GRAPH DC BOARD | | SC | 1.990.601-00 | |

| | | | | | |
|---|---|---|---|---|---|
| 0 12.0190 CEstermann | 1 26.0190 CEstermann | 2 4.9.90 VOL | | | |
| | | | | PAGE 2 OF 2 | |
| STUDER | BAR-GRAPH DC BOARD | | SC | 1.990.601-00 | |

## BAR-GRAPH DC BOARD

1.990.601.00




| Änderung | Datum | Ges. | Gepr. | Gen. | Index |
|---|---|---|---|---|---|
| | 30.11.92 | | | | C |
| | 9.10.90 | | | | B |
| Ausgabe | 2.3.90 | | | | A |

Ausgabe für:

STUDER REGENSDORF ZÜRICH | Benennung: BAR-GRAPH DC BOARD ESE | Nr.: 1.990.601-00

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|
| | C.....1 | 59.22.5101 | 100 uF 25V EL | |
| | C.....2 | 59.22.5101 | 100 uF 25V EL | |
| | C.....3 | 59.22.5101 | 100 uF 10V EL | |
| | C.....4 | . . . 0 | not used | |
| | C.....5 | 59.06.5102 | 1 nF 5% PE | |
| | C.....6 | 59.22.5101 | 100 uF 25V EL | |
| 01 | C.....7 | 59.34.1180 | 18 pF 5% CER (auf Loetseite: IC1 zw. Pin 5 & 8) | |
| 02 | C....10 | 59.99.1721 | 220 uF 10V EL stehend | |
| | C....11 | 59.22.5101 | 100 uF 25V EL | |
| | C....12 | 59.22.5101 | 100 uF 25V EL | |
| | C....13 | 59.06.0104 | 100 nF PE | |
| | C....14 | 59.06.0104 | 100 nF PE | |
| | C....15 | 59.06.5222 | 2.2 nF 5% PE | |
| | C....41 | 59.22.8470 | 47 uF 50V EL | |
| | C....42 | 59.22.8470 | 47 uF 50V EL | |
| | C...110 | 59.06.0102 | 1 nF PE | |
| | C...111 | 59.06.0102 | 1 nF PE | |
| | C...120 | 59.06.0102 | 1 nF PE | |
| | C...121 | 59.06.0102 | 1 nF PE | |
| | C...130 | 59.06.0102 | 1 nF PE | |
| | C...131 | 59.06.0102 | 1 nF PE | |
| | C...140 | 59.06.0102 | 1 nF PE | |
| | C...141 | 59.06.0102 | 1 nF PE | |
| | C...150 | 59.06.0102 | 1 nF PE | |
| | C...151 | 59.06.0102 | 1 nF PE | |
| | C...160 | 59.06.0102 | 1 nF PE | |
| | C...161 | 59.06.0102 | 1 nF PE | |
| | C...170 | 59.06.0102 | 1 nF PE | |
| | C...171 | 59.06.0102 | 1 nF PE | |
| | C...180 | 59.06.0102 | 1 nF PE | |
| | C...181 | 59.06.0102 | 1 nF PE | |
| | D.....1 | 50.04.0122 | 1N4001 | any |
| | D.....2 | 50.04.0122 | 1N4001 | any |
| | D.....3 | 50.04.0122 | 1N4001 | any |
| | D....20 | 50.04.0125 | 1N4448 | any |
| | D....21 | 50.04.0138 | UF4004 | any |
| | D....22 | 50.04.0138 | UF4004 | any |
| | D....30 | 50.04.0125 | 1N4448 | any |
| | D....31 | 50.04.0138 | UF4004 | any |
| | D....32 | 50.04.0138 | UF4004 | any |
| | D....41 | 50.04.0138 | UF4004 | any |
| | D....42 | 50.04.0138 | UF4004 | any |
| | D....43 | 50.04.0138 | UF4004 | any |
| | D....44 | 50.04.0138 | UF4004 | any |
| | D....45 | 50.04.1504 | Z 5.6V 1.3W | any |
| | D...210 | 50.04.0125 | 1N4448 | any |
| | D...211 | 50.04.0125 | 1N4448 | any |
| | D...220 | 50.04.0125 | 1N4448 | any |
| | D...221 | 50.04.0125 | 1N4448 | any |
| | D...230 | 50.04.0125 | 1N4448 | any |
| | D...231 | 50.04.0125 | 1N4448 | any |
| | D...240 | 50.04.0125 | 1N4448 | any |
| | D...241 | 50.04.0125 | 1N4448 | any |
| | IC....1 | 50.05.0243 | NE 5534N single Op-Amp | Ex,Ra,Sig |
| | IC...10 | 50.09.0103 | TL 071 single OP-Amp | TI |
| | IC...11 | 50.05.0283 | LM 393 dual Comparator | Sig,Tho,TI |
| | IC..100 | 50.07.0051 | 4051 CMOS 8-Channel analog Mux | Ph,Mot,SGS |
| | IC..101 | 50.05.0283 | LM 393 dual Comparator | Sig,Tho,TI |
| | IC..102 | 50.05.0283 | LM 393 dual Comparator | Sig,Tho,TI |
| | IC..110 | 50.09.0119 | TL 062 low power Op-Amp | SGS,Tho,TI |
| | IC..130 | 50.09.0119 | TL 062 low power Op-Amp | SGS,Tho,TI |
| | IC..150 | 50.09.0119 | TL 062 low power Op-Amp | SGS,Tho,TI |
| | IC..170 | 50.09.0119 | TL 062 low power Op-Amp | SGS,Tho,TI |
| | IC..200 | 50.07.0051 | 4051 CMOS 8-Channel analog Mux | Ph,Mot,SGS |
| | IC..300 | 50.07.0051 | 4051 CMOS 8-Channel analog Mux | Ph,Mot,SGS |
| | IC..310 | 50.07.0051 | 4051 CMOS 8-Channel analog Mux | Ph,Mot,SGS |
| | J.....1 | 54.14.5540 | Micro-Match, 20 pin | AMP |
| | J.....2 | 54.14.5536 | Micro-Match, 16 pin | AMP |
| | L....10 | 62.03.0100 | 2.2 mH Toridial Choke 180mOhm | Sie |
| | P.....1 | 54.11.2013 | Euroconnector, 2*16 pin | |
| | Q....20 | 50.03.0340 | BC 337-25 NPN | any |
| | Q....21 | 50.03.0340 | BC 337-25 NPN | any |
| | Q....22 | 50.03.0351 | BC 327-25 PNP | any |
| | Q....30 | 50.03.0340 | BC 337-25 NPN | any |
| | Q....31 | 50.03.0340 | BC 337-25 NPN | any |
| | Q....32 | 50.03.0351 | BC 327-25 PNP | any |
| | R.....1 | 57.92.7013 | 0.75 Ohm PTC 0.5A | |
| | R.....2 | 57.92.7013 | 0.75 Ohm PTC 0.5A | |

| Ad | ..POS.. | ...REF.No... | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|
| | R.....3 | 57.92.7013 | 0.75 Ohm PTC 0.5A | |
| | R.....4 | 57.11.3753 | 75 kOhm | |
| | R.....5 | 57.11.3153 | 15 kOhm | |
| | R.....6 | 57.11.3101 | 100 Ohm | |
| | R.....7 | 57.11.3102 | 1 kOhm | |
| | R....11 | 57.11.3103 | 10 kOhm | |
| | R....12 | 57.11.3103 | 10 kOhm | |
| | R....13 | 57.11.3103 | 10 kOhm 1% | |
| | R....14 | 57.11.3103 | 10 kOhm 1% | |
| | R....15 | 57.11.3562 | 5.6 kOhm 1% | |
| | R....20 | 57.11.3302 | 3 kOhm | |
| | R....30 | 57.11.3302 | 3 kOhm | |
| | R....41 | 57.11.3101 | 100 Ohm | |
| | R....42 | 57.11.3101 | 100 Ohm | |
| | R....43 | 57.11.3203 | 20 kOhm | |
| | R...101 | 57.11.3203 | 20 kOhm | |
| | R...102 | 57.11.3203 | 20 kOhm | |
| | R...103 | 57.11.3203 | 20 kOhm | |
| | R...104 | 57.11.3203 | 20 kOhm | |
| | R...110 | 57.11.3124 | 120 kOhm | |
| | R...120 | 57.11.3124 | 120 kOhm | |
| | R...130 | 57.11.3124 | 120 kOhm | |
| | R...140 | 57.11.3124 | 120 kOhm | |
| | R...150 | 57.11.3124 | 120 kOhm | |
| | R...160 | 57.11.3124 | 120 kOhm | |
| | R...170 | 57.11.3124 | 120 kOhm | |
| | R...180 | 57.11.3124 | 120 kOhm | |
| | RA..110 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..111 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RA..120 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..121 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RA..130 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..131 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RA..140 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..141 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RA..150 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..151 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RA..160 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..161 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RA..170 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..171 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RA..180 | 58.05.0104 | 100 kOhm trim pot lin | |
| | RA..181 | 58.05.0502 | 5 kOhm trim pot lin | |
| | RZ..100 | 57.88.4332 | 3.3 kOhm 2% .*8 | |
| | RZ..110 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..120 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..130 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..140 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..150 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..160 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..170 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..180 | 57.88.2103 | 10 kOhm 2% .*4 | |
| | RZ..200 | 57.88.2101 | 100 Ohm 2% .*4 | |
| | RZ..210 | 57.88.2104 | 100 kOhm 2% .*4 | |
| | RZ..300 | 57.88.4104 | 100 kOhm 2% .*8 | |
| | RZ..310 | 57.88.4104 | 100 kOhm 2% .*8 | |
| | T....10 | 1.022.638.00 | 10 mH Konvertertrafo VFD-Bargraph | St |
| | MP....1 | 1.913.117.01 | 1 pcs Abschirmhaube | |
| | MP....2 | 53.03.0166 | 9 pcs IC socket 8 pin | |
| | MP....3 | 53.03.0168 | 4 pcs IC socket 16 pin | |
| | MP....4 | 1.010.001.61 | 1 pcs Unterlage zu RN6 | |
| | MP....5 | 43.01.0108 | 1 pcs ESE-Schild | |
| | MP....6 | 28.99.0119 | 2 pcs Rohrniete D2.5*5*0.15 | |
| | MP....7 | 1.990.601.04 | 1 pcs Nr.-Etikette 5 * 20 | |
| | MP....8 | 1.990.601.11 | 1 pcs Bargraph DC PCB | |
| | MP....9 | 1.990.600.01 | 2 pcs Isolierunterlage Micro Match | |
| 02 | MP...10 | 1.010.027.23 | 1 pcs Isolierscheibe 9/3,2x0,25 PTFE | |
| 02 | MP...11 | 1.010.101.65 | 1 pcs Schrumpfschlauch 1,2/0,6 x 9 | |

09.10.90 Index 1) New: C7 000000
30.11.92 Index 2) New: C10 DC isolation of T10

EL=Electrolytic, PE=Polyester

MANUFACTURER: AMP=AMP Incorporated, Ex=Exar, Ph=Philips, Mot=Motorola, Ra=Raytheon, Sie=Siemens, SGS=SGS/Ates, Sig=Signetics, St=Studer, Tho=Thomson, TI=Texas Instrument

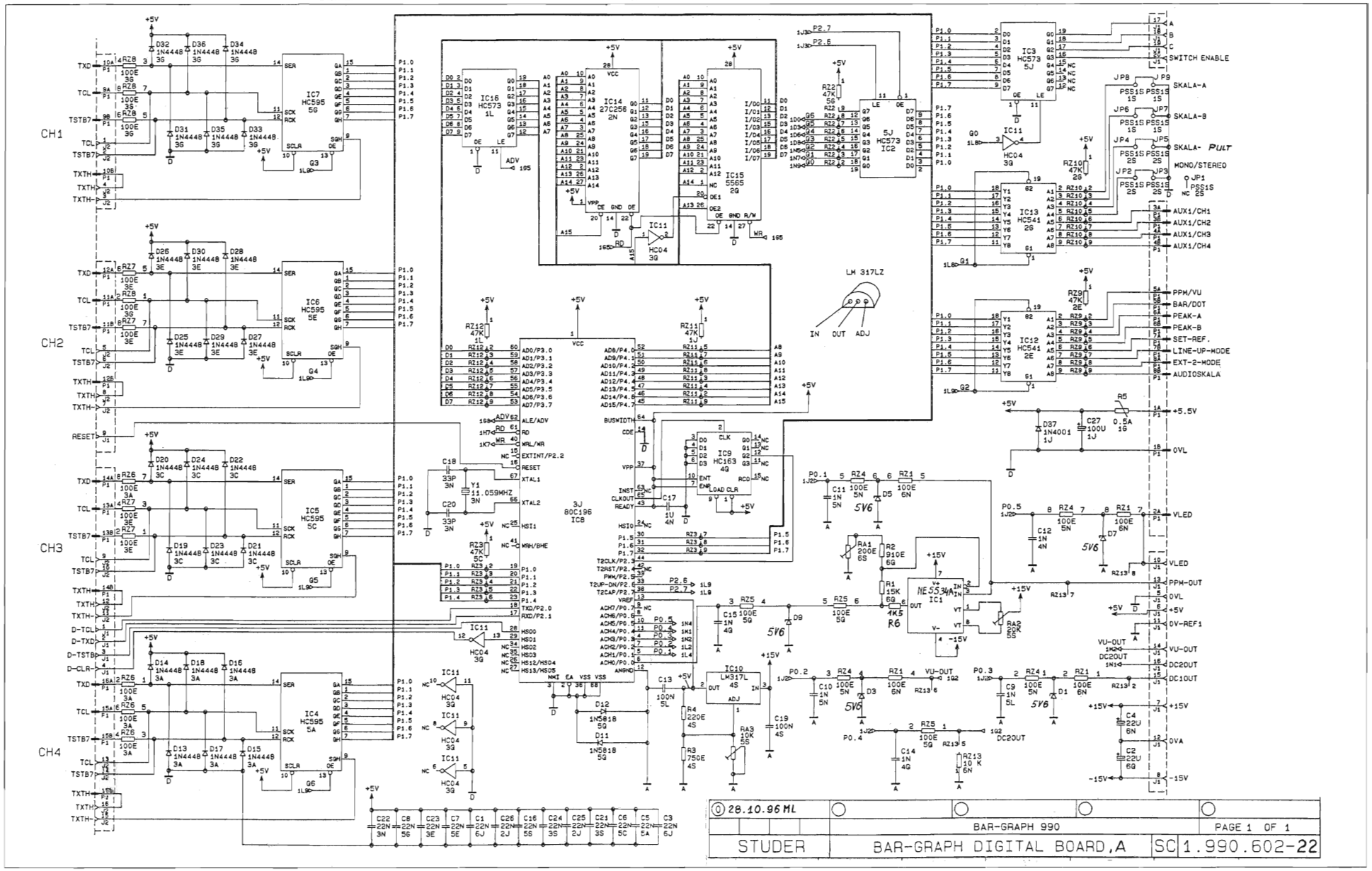
1.990.601.00 BAR-GRAPH DC BOARD CE 90/02/0600

1.990.601.00 BAR-GRAPH DC BOARD FR192/11/3002

END

## BAR-GRAPH DIGITAL BOARD

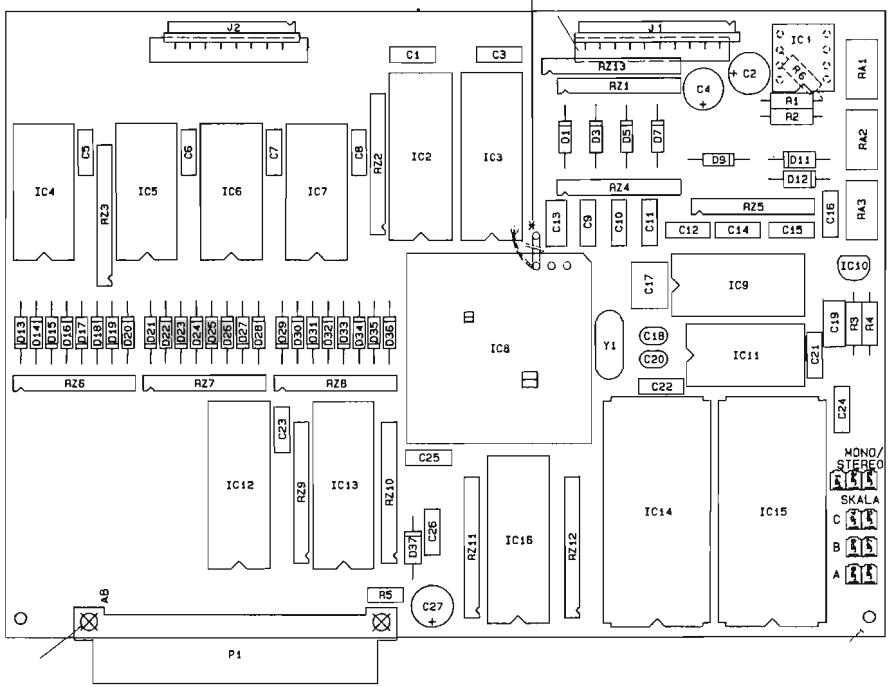
1.990.602.22




| | | | |
|---|---|---|---|
| 0 28.10.96 ML | | | |
| | BAR-GRAPH 990 | | PAGE 1 OF 1 |
| STUDER | BAR-GRAPH DIGITAL BOARD,A | SC | 1.990.602-22 |

## BAR-GRAPH DIGITAL BOARD

1.990.602.22




| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 2 | 59.22.6220 | | 22u | EL 35V, 20%, RM5 |
| 0 | C 3 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 4 | 59.22.6220 | | 22u | EL 35V, 20%, RM5 |
| 0 | C 5 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 6 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 7 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 8 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 9 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 10 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 11 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 12 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 13 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 14 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 15 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 16 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 17 | 59.06.0105 | | 1u0 | PETP, 50V, 10%, RM5 |
| 0 | C 18 | 59.34.2330 | | 33p | CER 63V, 5%, N150 |
| 0 | C 19 | 59.06.0104 | | 100n | PETP, 63V, 10%, RM5 |
| 0 | C 20 | 59.34.2330 | | 33p | CER 63V, 5%, N150 |
| 0 | C 21 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 22 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 23 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 24 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 25 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 26 | 59.06.0223 | | 22n | PETP, 63V, 10%, RM5 |
| 0 | C 27 | 59.22.3101 | | 100u | EL 10V, 20%, RM5 |
| 0 | D 1 | 50.04.1108 | | 5V6 | Zener, 5%, 0.5W, DO-35 |
| 0 | D 2 | not used | | | |
| 0 | D 3 | 50.04.1108 | | 5V6 | Zener, 5%, 0.5W, DO-35 |
| 0 | D 4 | not used | | | |
| 0 | D 5 | 50.04.1108 | | 5V6 | Zener, 5%, 0.5W, DO-35 |
| 0 | D 6 | not used | | | |
| 0 | D 7 | 50.04.1108 | | 5V6 | Zener, 5%, 0.5W, DO-35 |
| 0 | D 8 | not used | | | |
| 0 | D 9 | 50.04.1108 | | 5V6 | Zener, 5%, 0.5W, DO-35 |
| 0 | D 10 | not used | | | |
| 0 | D 11 | 50.04.0512 | | 1N5818 | D 1N 5818, 1N 5819, |
| 0 | D 12 | 50.04.0512 | | 1N5818 | D 1N 5818, 1N 5819, |
| 0 | D 13 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 14 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 15 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 16 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 17 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 18 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 19 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 20 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 21 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 22 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 23 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 24 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 25 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 26 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 27 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 28 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 29 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 30 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 31 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 32 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 33 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 34 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 35 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 36 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 37 | 50.04.0122 | | 1N4001 | 1A, DO 41 |
| 0 | IC 1 | 50.05.0244 | | NE5534AN | IC 5534 ANB, NE 5534 SAN, A |
| 0 | IC 2 | 50.17.1573 | | 74HC573 | IC ..74 HC 573... ,A |
| 0 | IC 3 | 50.17.1573 | | 74HC573 | IC ...74 HC 573... ,A |
| 0 | IC 4 | 50.17.1595 | | 74HC595 | IC 74 HC 595 ... ,A |
| 0 | IC 5 | 50.17.1595 | | 74HC595 | IC 74 HC 595 ... ,A |
| 0 | IC 6 | 50.17.1595 | | 74HC595 | IC 74 HC 595 ... ,A |
| 0 | IC 7 | 50.17.1595 | | 74HC595 | IC 74 HC 595 ... ,A |
| 0 | IC 8 | 50.63.0003 | | 80C196 | N 80 C 196 KB-16 |
| 0 | IC 9 | 50.17.1163 | | 74HC163 | IC ...74 HC 163... ,A |
| 0 | IC 10 | 50.10.0108 | | LM317L | IC LM 317 LZ, |
| 0 | IC 11 | 50.17.1004 | | 74HC04 | IC ...74 HC 04... ,A |
| 0 | IC 12 | 50.17.1541 | | 74HC541 | IC 74 HC 541... ,A |
| 0 | IC 13 | 50.17.1541 | | 74HC541 | IC ..74 HC 541... ,A |
| 0 | IC 14 | 50.14.2004 | | 27C256 | IC 27 C 256 - 25 ,A |
| | | | | | *BAR-GRAPH 990 04/93 1.990.699.21* |
| 0 | IC 15 | 50.14.0133 | | 5565 | IC HM 6264LP-15 ,A |
| 0 | IC 16 | 50.17.1573 | | 74HC573 | IC ..74 HC 573... ,A |
| 0 | J 1 | 54.14.5540 | | 20p | J PCB-BUCHSE WINKEL 20 P |
| 0 | J 2 | 54.14.5536 | | 16p | J PCB-BUCHSE WINKEL 16 P |

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | MP 1 | 28.99.0119 | 2 pcs | | ROHRNIETE D 2.5*0.15* 9 |
| 0 | MP 2 | 43.01.0108 | | Label | ESE-WARNSCHILD |
| 0 | MP 3 | 1.101.001.22 | | | TEXT-ETIK. 5*20 HARDWARE -22 |
| 0 | MP 4 | 1.990.600.01 | | | ISOLIERUNTERLAGE MICRO-MATCH |
| 0 | MP 5 | 1.990.602.04 | | | NR.-ETIKETTE 5 * 20 |
| 0 | MP 6 | 1.990.602.11 | | | BARGRAPH DIGITAL PCB |
| 0 | MP 7 | 1.990.699.01 | | | TEXT - ETIKETTE 10 * 20 |
| 0 | MP 8 | 54.01.0020 | 9 pcs | 1p | Pin 0.63*0.63 |
| 0 | P 1 | 54.11.2013 | | 32p | EU-BK 2*16p |
| 0 | R 1 | 57.11.3153 | | 15k | MF, 1%, 0207 |
| 0 | R 2 | 57.11.3911 | | 910R | MF, 1%, 0207 |
| 0 | R 3 | 57.11.3751 | | 750R | MF, 1%, 0207 |
| 0 | R 4 | 57.11.3221 | | 220R | MF, 1%, 0207 |
| 0 | R 5 | 57.92.7013 | | 0.5A | POLY- PTC, 63V |
| 0 | R 6 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | RA 1 | 58.01.9201 | | 200R | Cermet, 10%, 0.5W, vertical |
| 0 | RA 2 | 58.01.9203 | | 20k | Cermet, 10%, 0.5W, vertical |
| 0 | RA 3 | 58.01.9103 | | 10k | Cermet, 10%, 0.5W, vertical |
| 0 | RZ 1 | 57.88.2101 | | 4*100R | 2%, SIP 8 |
| 0 | RZ 2 | 57.88.4473 | | 8*47k | 2%, SIP 9 |
| 0 | RZ 3 | 57.88.4473 | | 8*47k | 2% SIP 9 |
| 0 | RZ 4 | 57.88.2101 | | 4*100R | 2%, SIP 8 |
| 0 | RZ 5 | 57.88.2101 | | 4*100R | 2%, SIP 8 |
| 0 | RZ 6 | 57.88.2101 | | 4*100R | 2%, SIP 8 |
| 0 | RZ 7 | 57.88.2101 | | 4*100R | 2%, SIP 8 |
| 0 | RZ 8 | 57.88.2101 | | 4*100R | 2%, SIP 8 |
| 0 | RZ 9 | 57.88.4473 | | 8*47k | 2%, SIP 9 |
| 0 | RZ 10 | 57.88.4473 | | 8*47k | 2%, SIP 9 |
| 0 | RZ 11 | 57.88.4473 | | 8*47k | 2%, SIP 9 |
| 0 | RZ 12 | 57.88.4473 | | 8*47k | 2%, SIP 9 |
| 0 | RZ 13 | 57.88.4103 | | 8*10k | 2%, SIP 9 |
| 0 | XIC 1 | 53.03.0166 | | 8p | DIL 0.3", lot, gerade |
| 0 | XIC 2 | 53.03.0165 | | 20p | DIL 0.3", lot, gerade |
| 0 | XIC 3 | 53.03.0165 | | 20p | DIL 0.3", lot, gerade |
| 0 | XIC 4 | 53.03.0168 | | 16p | DIL 0.3", lot, gerade |
| 0 | XIC 5 | 53.03.0168 | | 16p | DIL 0.3", lot, gerade |
| 0 | XIC 6 | 53.03.0168 | | 16p | DIL 0.3", lot, gerade |
| 0 | XIC 7 | 53.03.0168 | | 16p | DIL 0.3", lot, gerade |
| 0 | XIC 8 | 53.03.2268 | | PLCC68p | PLCC-Sockel 68p |
| 0 | XIC 9 | 53.03.0168 | | 16p | DIL 0.3", lot, gerade |
| 0 | XIC 11 | 53.03.0167 | | 14p | DIL 0.3", lot, gerade |
| 0 | XIC 12 | 53.03.0165 | | 20p | DIL 0.3", lot, gerade |
| 0 | XIC 13 | 53.03.0165 | | 20p | DIL 0.3", lot, gerade |
| 0 | XIC 14 | 53.03.0173 | | 28p | DIL 0.6", lot, gerade |
| 0 | XIC 15 | 53.03.0173 | | 28p | DIL 0.6", lot, gerade |
| 0 | XIC 16 | 53.03.0165 | | 20p | DIL 0.3", lot, gerade |
| 0 | Y 1 | 89.01.1004 | | 11.059MHz | Y 11.059 MHZ, RW 43 |

End of List

Comments:

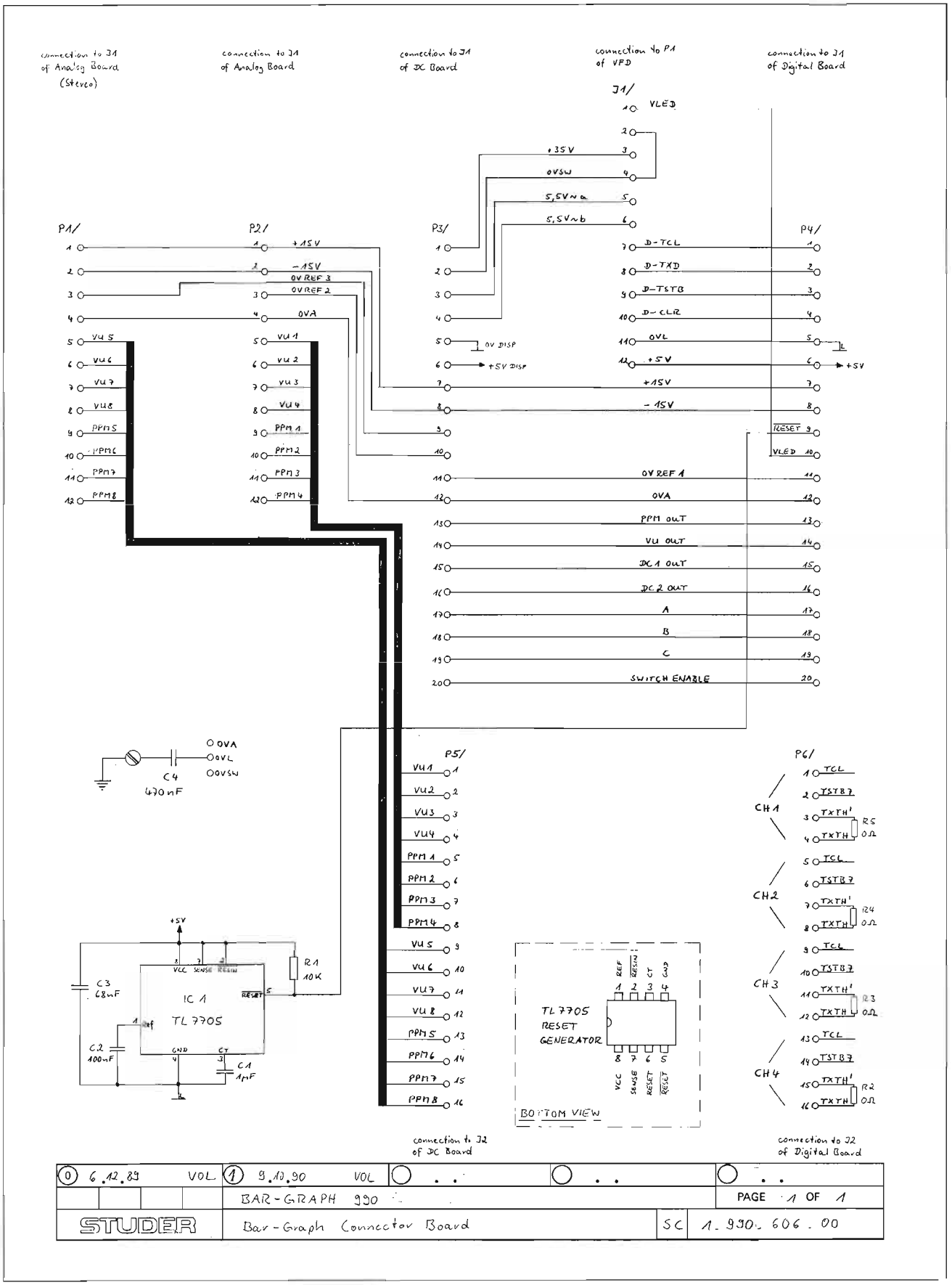
| | | | | | |
|---|---|---|---|---|---|
| | | | | | 3 |
| | | | | | 2 |
| | | | | | 1 |
| | | | | | 0 |
| Name | 11.12.96 | | | | |
| Datum | Urs | Unterschrift | Datum | Kontrolle | |

Name for.

| | | |
|---|---|---|
| STUDER REGENSDORF ZÜRICH | Bargraph Digital Board ESE | 1.990.602-22 |

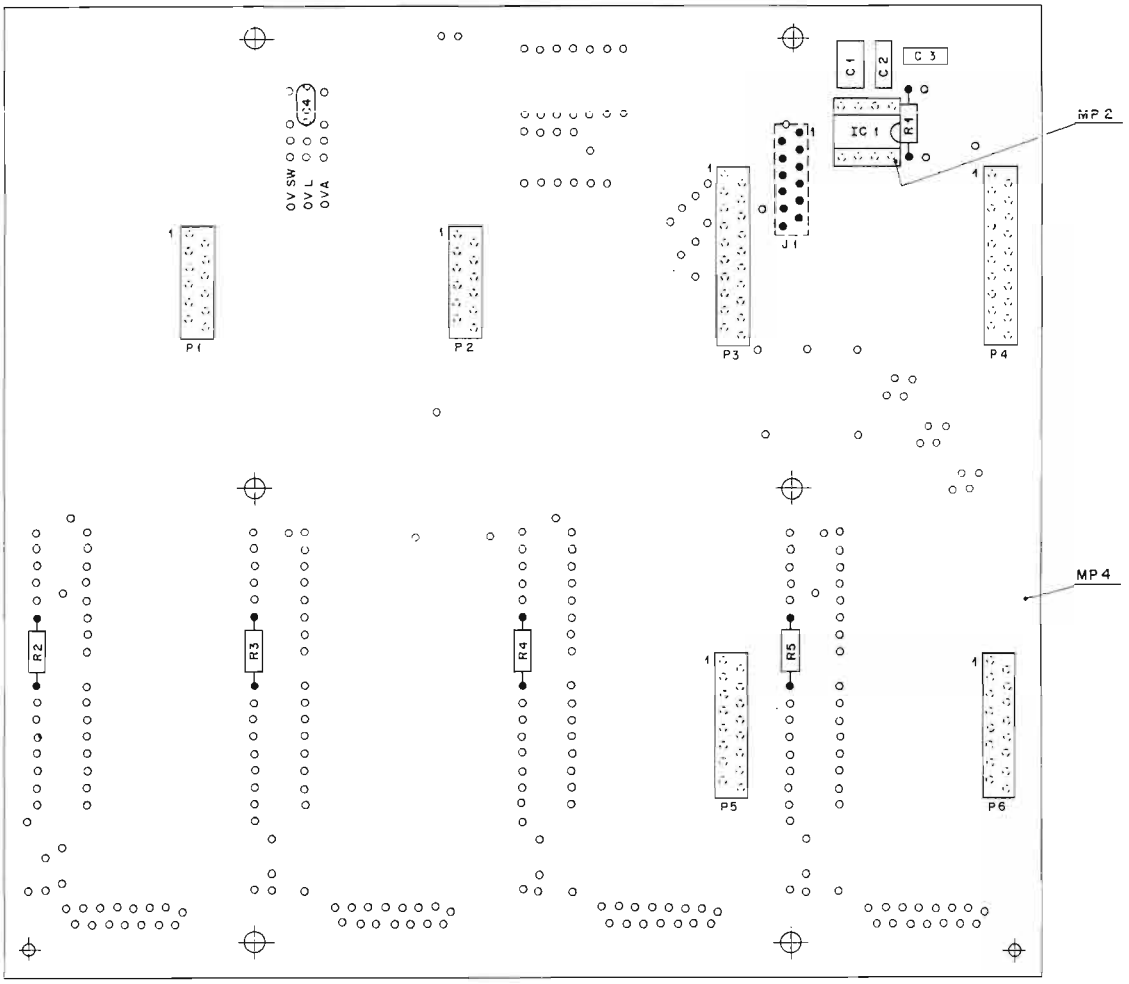
## BAR-GRAPH CONNECTOR BOARD

1.990.606.00




| | | | | |
|---|---|---|---|---|
| 0 6.12.89 VOL | 1 9.10.90 VOL | | | |
| | BAR-GRAPH 990 | | | PAGE 1 OF 1 |
| STUDER | Bar-Graph Connector Board | SC | 1.990.606.00 | |

## BAR-GRAPH CONNECTOR BOARD 1.990.606.00




| Ad | ..POS.. | ...REF.No... | | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|---|
| | C.....1 | 59.06.0105 | 1 uF | 10% PE | |
| | C.....2 | 59.06.0104 | 100 nF | 10% PE | |
| | C.....3 | 59.06.0683 | 68 nF | 10% PE | |
| | C.....4 | 59.32.1152 | 1.5 nF | CER 400V | |
| 01 | C.....4 | 59.06.0474 | 470 nF | 10% PE | |
| | IC....1 | 50.11.0122 | TL7705ACP | Reset generator | SGS,TI |
| | J.....1 | 54.14.5512 | | Micro-Match, 12 pin | AMP |
| | P.....1 | 54.14.5582 | | Micro-Match, 12 pin | AMP |
| | P.....2 | 54.14.5582 | | Micro-Match, 12 pin | AMP |
| | P.....3 | 54.14.5590 | | Micro-Match, 20 pin | AMP |
| | P.....4 | 54.14.5590 | | Micro-Match, 20 pin | AMP |
| | P.....5 | 54.14.5586 | | Micro-Match, 16 pin | AMP |
| | P.....6 | 54.14.5586 | | Micro-Match, 16 pin | AMP |
| | R.....1 | 57.11.3103 | 10 kOhm | 1% | |
| | R.....2 | 57.11.3000 | 0 Ohm | | |
| | R.....3 | 57.11.3000 | 0 Ohm | | |
| | R.....4 | 57.11.3000 | 0 Ohm | | |
| | R.....5 | 57.11.3000 | 0 Ohm | | |
| | MP....1 | 43.01.0108 | 0001 pcs | ESE-Warnschild | |
| | MP....2 | 53.03.0166 | 0001 pcs | IC-Sockel, DIL 8 | |
| | MP....3 | 1.990.606.04 | 0000 pcs | Nr.-Etikette 5 * 20 | |
| | MP....4 | 1.990.608.11 | 0001 pcs | Bar-Graph Connector+Bus PCB | St |

9.10.90 Index 1) Aenderung bei: C4

PE = polyester

MANUFACTURER AMP=AMP Incorporated, SGS=SGS/Thomson, St=Studer, TI=Texas Instruments

1.990.606.00 BAR-GRAPH CONNECTOR BOARD V0190/02/0600

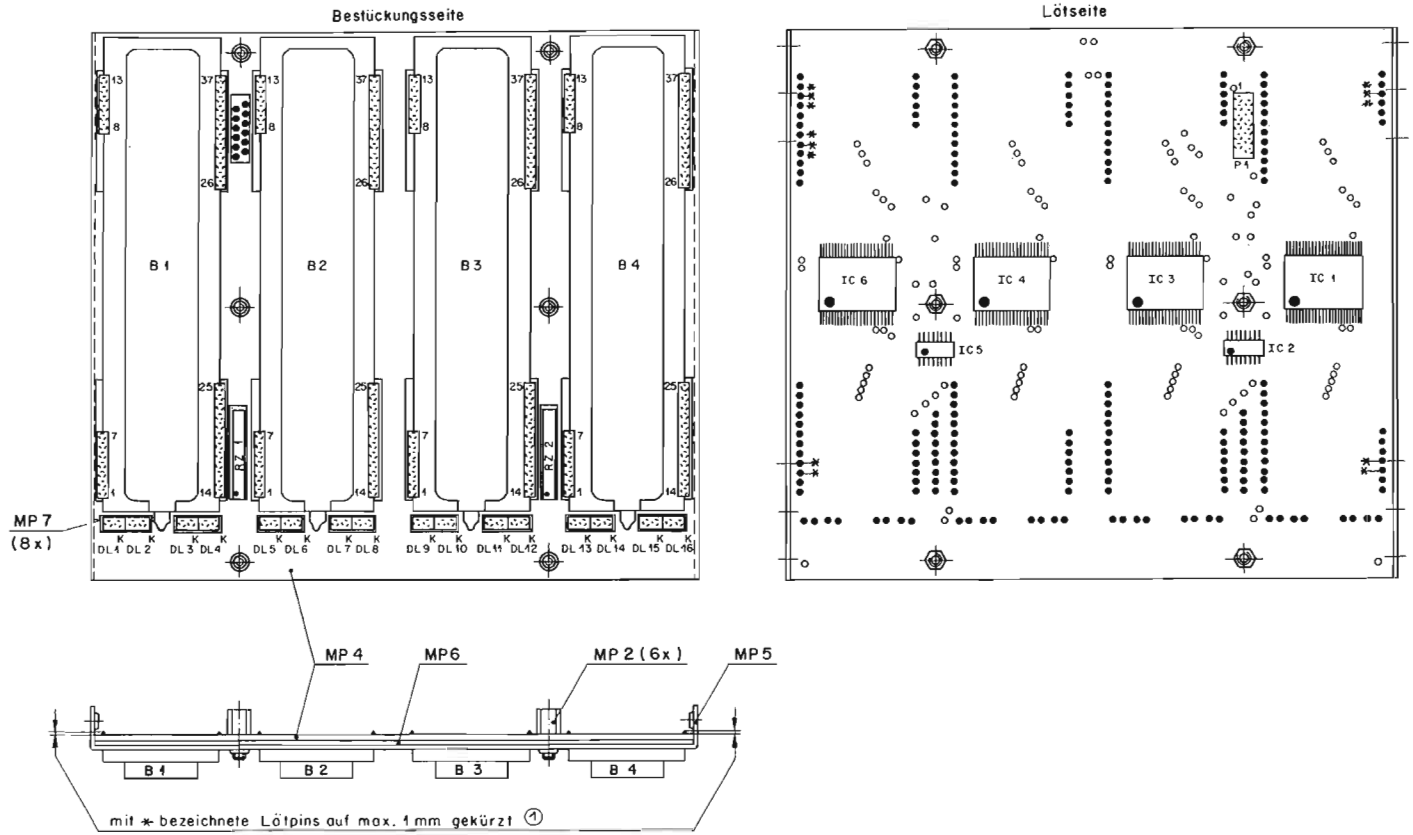
1.990.606.00 BAR-GRAPH CONNECTOR BOARD HOR90/10/0901

Änderung 3 2 1
Ausgabe 0 8.6.90 VOL
Datum Gez. Gepr. Gen. Index

Ersatz für: Ersetzt durch: Kopie für

STUDER REGENSDORF ZÜRICH | Benennung: BARGRAPH CONNECTOR BOARD ESE | Nummer: 1.990.606-00

## BAR-GRAPH VFD BOARD 1.990.607.81




| Ad | ..POS.. | ...REF.No... | | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|---|
| | B.....1 | 73.01.0300 | FG202SA2 | Fluorescent bargraph display | Itron |
| | B.....2 | 73.01.0300 | FG202SA2 | Fluorescent bargraph display | Itron |
| | B.....3 | 73.01.0300 | FG202SA2 | Fluorescent bargraph display | Itron |
| | B.....4 | 73.01.0300 | FG202SA2 | Fluorescent bargraph display | Itron |
| | DL....1 | 50.04.2119 | MV57124A | LED,red | GI |
| | DL....2 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | DL....3 | 50.04.2146 | MV54124A | LED,green | GI |
| | DL....4 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | DL....5 | 50.04.2119 | MV57124A | LED,red | GI |
| | DL....6 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | DL....7 | 50.04.2146 | MV54124A | LED,green | GI |
| | DL....8 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | DL....9 | 50.04.2119 | MV57124A | LED,red | GI |
| | DL...10 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | DL...11 | 50.04.2146 | MV54124A | LED,green | GI |
| | DL...12 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | DL...13 | 50.04.2119 | MV57124A | LED,red | GI |
| | DL...14 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | DL...15 | 50.04.2146 | MV54124A | LED,green | GI |
| | DL...16 | 50.04.2118 | MV53124A | LED,yellow | GI |
| | IC....1 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | IC....2 | 50.62.1595 | 74 HC 595 | 8 bit shift register (SMD) | NS,TI |
| | IC....3 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | IC....4 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | IC....5 | 50.62.1595 | 74 HC 595 | 8 bit shift register (SMD) | NS,TI |
| | IC....6 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | P.....1 | 54.14.5582 | | Micro-Match, 12 pin | AMP |
| | RZ....1 | 57.88.4101 | 100 Ohm | 2% ,8* | |
| | RZ....2 | 57.88.4101 | 100 Ohm | 2% ,8* | |
| | MP....1 | 43.01.0308 | 0001 pcs | ESE-Warnschild | |
| | MP....2 | 1.010.123.27 | 0006 pcs | Gewindebolzen M3/M3 * 6.5 | |
| | MP....3 | 1.990.607.04 | 0000 pcs | Nr.-Etikette 5 * 20 | |
| | MP....4 | 1.990.607.12 | 0001 pcs | Bar-Graph VFD PCB | St |
| | MP....5 | 1.913.420.03 | 0001 pcs | Chassis VFD Bar-Graph | |
| | MP....6 | 1.913.420.07 | 0001 pcs | Isolation VFD-Bar-Graph | |
| | MP....7 | 1.990.620.10 | 0008 pcs | Unterlage 2*LED VFD Bar-Graph | |

MANUFACTURER AMP=AMP Incorporated, GI=General Instruments, NS=National Semiconductors, OKI=OKI Semiconductors, St=Studer, TI=Texas Instruments

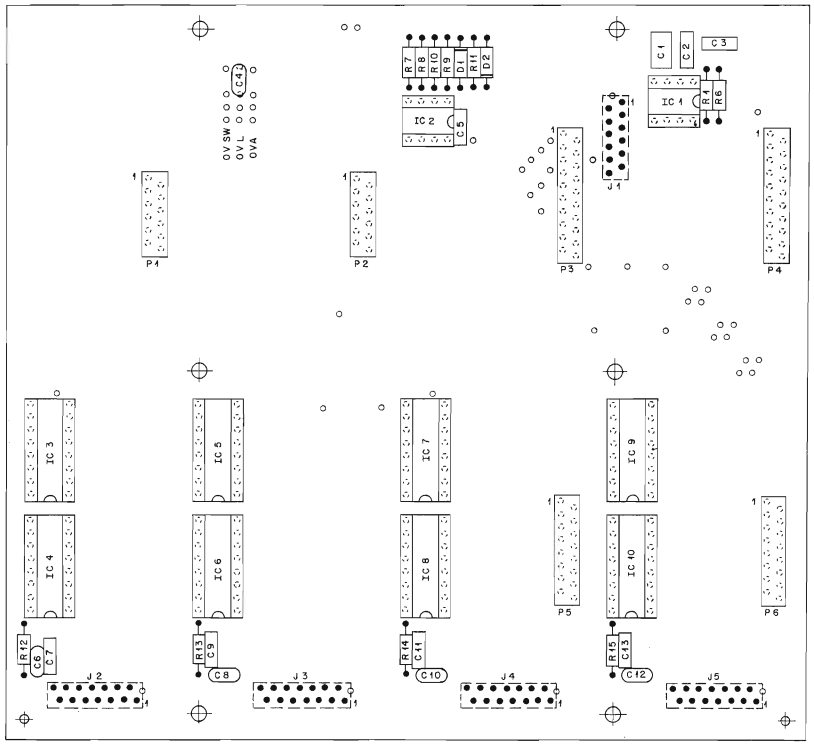
1.990.607.81 BAR-GRAPH VFD BOARD V0L90/05/0900

| | | | | | |
|---|---|---|---|---|---|
| Änderung | 4.9 92 | | | | |
| Datum | 6.6.90 | | | | |
| Name | Elektronik | Gezeichnet | Geprüft | Genehmigt | Datum |
| Kopie für: | | | | | |

STUDER REGENSDORF ZÜRICH | Benennung: BAR-GRAPH VFD BOARD ESE | Nummer: 1.990.607-81

## BAR-GRAPH CONNECTOR + BUS BOARD

1.990.608.00




| Ad | ..POS.. | ...REF.No... | DESCRIPTION | | | MANUFACTURER |
|---|---|---|---|---|---|---|
| | C.....1 | 59.06.0105 | 1 uF | 10% | PE | |
| | C.....2 | 59.06.0104 | 100 nF | 10% | PE | |
| | C.....3 | 59.06.0683 | 68 nF | 10% | PE | |
| | C.....4 | 59.32.1152 | 1.5 nF | | CER 400V | |
| 01 | C.....4 | 59.06.0474 | 470 nF | 10% | PE | |
| | C.....5 | 59.06.0683 | 68 nF | 10% | PE | |
| | C.....6 | 59.34.4101 | 100 pF | 5% | CER | |
| | C.....7 | 59.06.0683 | 68 nF | 10% | PE | |
| | C.....8 | 59.34.4101 | 100 pF | 5% | CER | |
| | C.....9 | 59.06.0683 | 68 nF | 10% | PE | |
| | C....10 | 59.34.4101 | 100 pF | 5% | CER | |
| | C....11 | 59.06.0683 | 68 nF | 10% | PE | |
| | C....12 | 59.34.4101 | 100 pF | 5% | CER | |
| | C....13 | 59.06.0683 | 68 nF | 10% | PE | |
| | D.....1 | 50.04.0125 | 1N4448 | | | any |
| | D.....2 | 50.04.1504 | BZX 85 | 5.6V | | ITT,Mot,Phi,Tf,SGS |
| | IC....1 | 50.11.0122 | TL7705ACP | Reset generator | | SGS,TI |
| | IC....2 | 50.09.0103 | TL 071 CP | Single FET op-amp | | TI |
| | IC....3 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | IC....4 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | IC....5 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | IC....6 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | IC....7 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | IC....8 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | IC....9 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | IC...10 | 50.17.1595 | 74 HC 595 | 8 bit shift register | | NS,SGS,TI |
| | J.....1 | 54.14.5512 | | Micro-Match, 12 pin | | AMP |
| | J.....2 | 54.14.5514 | | Micro-Match, 14 pin | | AMP |
| | J.....3 | 54.14.5514 | | Micro-Match, 14 pin | | AMP |
| | J.....4 | 54.14.5514 | | Micro-Match, 14 pin | | AMP |
| | J.....5 | 54.14.5514 | | Micro-Match, 14 pin | | AMP |
| | P.....1 | 54.14.5582 | | Micro-Match, 12 pin | | AMP |
| | P.....2 | 54.14.5582 | | Micro-Match, 12 pin | | AMP |
| | P.....3 | 54.14.5590 | | Micro-Match, 20 pin | | AMP |
| | P.....4 | 54.14.5590 | | Micro-Match, 20 pin | | AMP |
| | P.....5 | 54.14.5586 | | Micro-Match, 16 pin | | AMP |
| | P.....6 | 54.14.5586 | | Micro-Match, 16 pin | | AMP |
| | R.....1 | 57.11.3103 | 10 kOhm | 1% | | |
| | R.....2 | . . 0 | not used | | | |
| | R.....3 | . . 0 | not used | | | |
| | R.....4 | . . 0 | not used | | | |
| | R.....5 | . . 0 | not used | | | |
| | R.....6 | 57.11.3103 | 10 kOhm | 1% | | |
| | R.....7 | 57.11.3114 | 110 kOhm | 1% | | |
| | R.....8 | 57.11.3363 | 36 kOhm | 1% | | |
| | R.....9 | 57.11.3183 | 18 kOhm | 1% | | |
| | R....10 | 57.11.3513 | 51 kOhm | 1% | | |
| | R....11 | 57.11.3471 | 470 Ohm | 1% | | |
| | R....12 | 57.11.3101 | 100 Ohm | 1% | | |
| | R....13 | 57.11.3101 | 100 Ohm | 1% | | |
| | R....14 | 57.11.3101 | 100 Ohm | 1% | | |
| | R....15 | 57.11.3101 | 100 Ohm | 1% | | |
| | MP....1 | 43.01.0108 | 0001 pcs | ESE-Warnschild | | |
| | MP....2 | 53.03.0166 | 0002 pcs | IC-Sockel, DIL 8 | | |
| | MP....3 | 53.03.0168 | 0008 pcs | IC-Sockel, DIL 16 | | |
| | MP....4 | 1.990.608.04 | 0000 pcs | Nr.-Etikette 5 * 20 | | |
| | MP....5 | 1.990.608.11 | 0001 pcs | Bar-Graph Connector+Bus PCB | | St |

9.10.90 Index 1) Aenderung bei: C4

CER = ceramic, PE = polyester

MANUFACTURER AMP=AMP Incorporated, ITT=Intermetall
Mot=Motorola, NS=National Semiconductors
Phi=Philips, SGS=SGS/Thomson, St=Studer,
Tf=Telefunken, TI=Texas Instruments

1.990.608.00 BAR-GRAPH CONNECTOR+BUS BOARD VOL90/02/0600

1.990.608.00 BAR-GRAPH CONNECTOR+BUS BOARD HOR90/10/0901

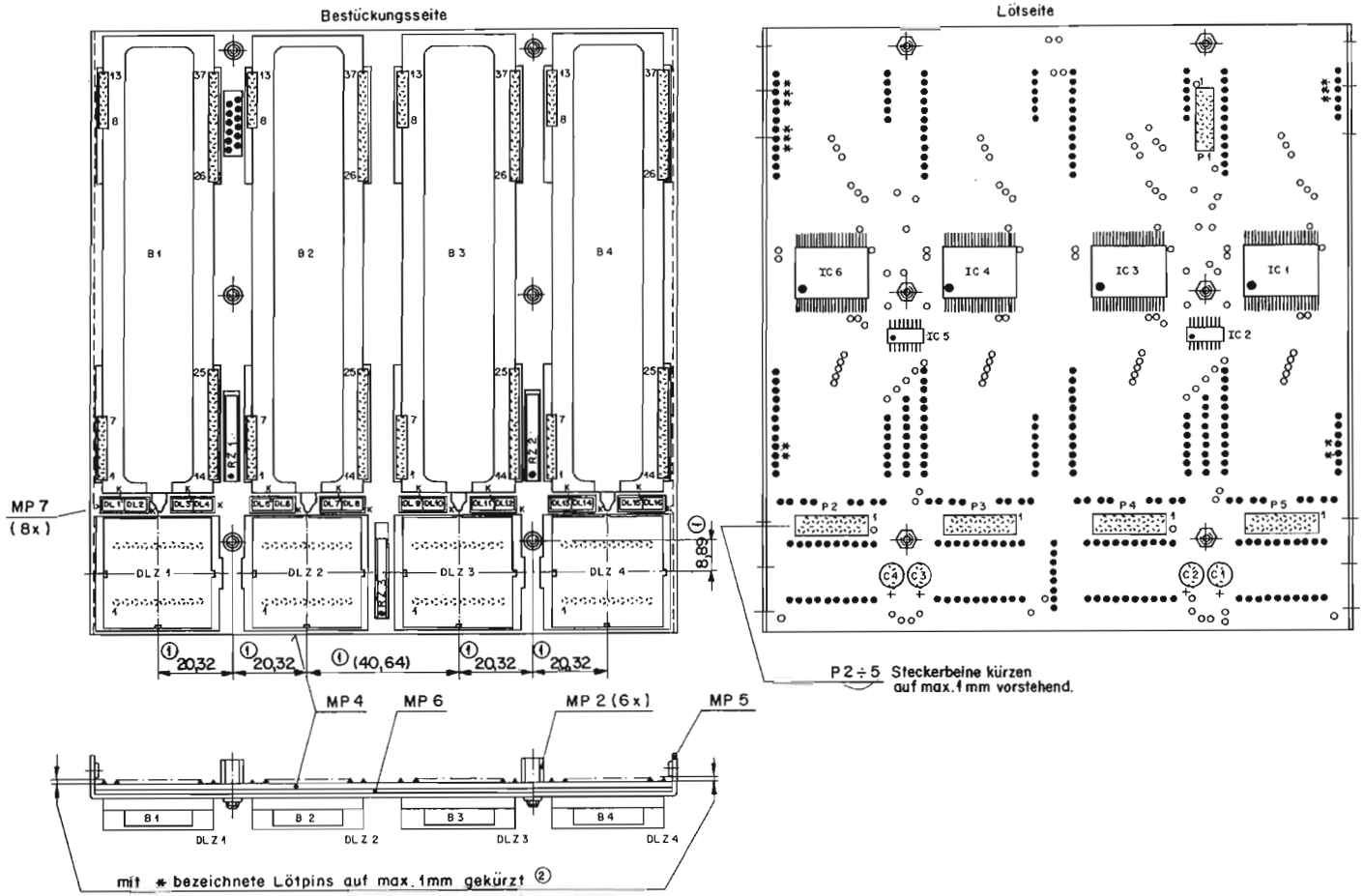
| Änderung | | | | | |
|---|---|---|---|---|---|
| | | | | | ③ |
| | | | | | ② |
| | | | | | ① |
| Ausgabe | 8.6.90 | | | VOL | ⓪ |
| | Datum | Gez. | Gepr. | Gen. | Index |

Kopie für:

| STUDER REGENSDORF ZÜRICH | Benennung: BARGRAPH CONNECTOR+ BUS BOARD ESE | Nummer: 1.990.608-00 |
|---|---|---|

## BAR-GRAPH VFD + BUS BOARD

1.990.609.81




| Ad | ..POS.. | ...REF.No... | | DESCRIPTION | MANUFACTURER |
|---|---|---|---|---|---|
| | B.....1 | 73.01.0300 | FG2025A2 | Fluorescent bargraph display | Itron |
| | B.....2 | 73.01.0300 | FG2025A2 | Fluorescent bargraph display | Itron |
| | B.....3 | 73.01.0300 | FG2025A2 | Fluorescent bargraph display | Itron |
| | B.....4 | 73.01.0300 | FG2025A2 | Fluorescent bargraph display | Itron |
| | C.....1 | 59.22.3101 | 100 uF | 10V EL | |
| | C.....2 | 59.22.3101 | 100 uF | 10V EL | |
| | C.....3 | 59.22.3101 | 100 uF | 10V EL | |
| | C.....4 | 59.22.3101 | 100 uF | 10V EL | |
| | DL....1 | 50.04.2119 | HY57124A | LED,red | GI |
| | DL....2 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DL....3 | 50.04.2146 | HY54124A | LED,green | GI |
| | DL....4 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DL....5 | 50.04.2119 | HY57124A | LED,red | GI |
| | DL....6 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DL....7 | 50.04.2146 | HY54124A | LED,green | GI |
| | DL....8 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DL....9 | 50.04.2119 | HY57124A | LED,red | GI |
| | DL...10 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DL...11 | 50.04.2146 | HY54124A | LED,green | GI |
| | DL...12 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DL...13 | 50.04.2119 | HY57124A | LED,red | GI |
| | DL...14 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DL...15 | 50.04.2146 | HY54124A | LED,green | GI |
| | DL...16 | 50.04.2118 | HY53124A | LED,yellow | GI |
| | DLZ...1 | 73.01.0400 | PD 1165 | 8*8 dot matrix display | Sie |
| | DLZ...2 | 73.01.0400 | PD 1165 | 8*8 dot matrix display | Sie |
| | DLZ...3 | 73.01.0400 | PD 1165 | 8*8 dot matrix display | Sie |
| | DLZ...4 | 73.01.0400 | PD 1165 | 8*8 dot matrix display | Sie |
| | IC....1 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | IC....2 | 50.62.1595 | 74 HC 595 | 8 bit shift register (SMD) | NS,TI |
| | IC....3 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | IC....4 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | IC....5 | 50.62.1595 | 74 HC 595 | 8 bit shift register (SMD) | NS,TI |
| | IC....6 | 50.62.0005 | MSC1162GSK | VFD driver | OKI |
| | P.....1 | 54.14.5582 | | Micro-Match, 12 pin | AMP |
| | P.....2 | 54.14.5584 | | Micro-Match, 14 pin | AMP |
| | P.....3 | 54.14.5584 | | Micro-Match, 14 pin | AMP |
| | P.....4 | 54.14.5584 | | Micro-Match, 14 pin | AMP |
| | P.....5 | 54.14.5584 | | Micro-Match, 14 pin | AMP |
| | RZ....1 | 57.88.4101 | 100 Ohm | 2% ,8" | |
| | RZ....2 | 57.88.4101 | 100 Ohm | 2% ,8" | |
| | RZ....3 | 57.88.2332 | 3.3 kOhm | 2% ,4" | |
| | MP....1 | 43.01.0108 | 0001 pcs | ESE-Warnschild | |
| | MP....2 | 1.010.123.27 | 0006 pcs | Gewindebolzen M3/M3 * 6.5 | |
| | MP....3 | 1.990.609.04 | 0000 pcs | Nr.-Etikette 5 * 20 | |
| | MP....4 | 1.990.609.12 | 0001 pcs | Bar-Graph VFD+Bus PCB | St |
| | MP....5 | 1.990.620.03 | 0001 pcs | Chassis VFD Bar-Graph + Bus | |
| | MP....6 | 1.990.620.07 | 0001 pcs | Isolation VFD Bar-Graph + Bus | |
| | MP....7 | 1.990.620.10 | 0008 pcs | Unterlage 2*LED VFD Bar-Graph | |

EL = electrolytic

MANUFACTURER AMP=AMP Incorporated, GI=General Instruments, NS=National Semiconductors, OKI=OKI Semiconductors, Sie=Siemens, St=Studer, TI=Texas Instruments

1.990.609.81 BAR-GRAPH VFD+BUS BOARD VOL90/05/0900

| | | |
|---|---|---|
| 4.9.92 | PH | ② |
| 27.8.91 | | ① |
| 7.6.90 | VOL | (0) |

STUDER REGENSDORF ZÜRICH | BAR-GRAPH VFD+BUS BOARD ESE | 1.990.609-81

# Schemata / Circuit Diagrams

## EU card rack

Circuit diagrams, component layouts, and parts lists:


* Basis PCB (1x1.914.5xx) ..... 1.914.500.00
* Line Amplifier MSC ..... 1.914.501.00
* High Level Input w. Trafo MSC ..... 1.914.502.81
* 0 Ohm Amplifier → 530 MSC ..... 1.914.503.00
* High Level Input Trafoless MSC ..... 1.914.504.81
* 3 W Amplifier MSC ..... 1.914.505.00
* Microphone Amplifier w. Trafo MSC ..... 1.914.506.81
* Microphone Amplifier (Electret) MSC ..... 1.914.507.81
* High Level Input with VCA MSC ..... 1.914.514.00
* VCA w. Bal. In- and Output MSC ..... 1.914.515.00
* VCA Module MSC ..... 1.914.518.81
* Limiter Control to VCA MSC ..... 1.914.519.81
* Call Generator 1900 Hz MSC ..... 1.914.520.00
* Call Decoder 20...60 Hz MSC ..... 1.914.521.00
* Call Decoder 1900 Hz MSC ..... 1.914.522.00
* Relay 2 u 6 V MSC ..... 1.914.523.00
* Relay 2 u 24 V MSC ..... 1.914.524.00
* Relay 2 u 6 V Low Noise MSC ..... 1.914.525.00
* Relay 2 u 24 V Low Noise MSC ..... 1.914.526.00
* VCA w. 3 Contr. Inp. MSC ..... 1.914.528.00
* Universal P.C. MSC ..... 1.914.529.00
* 0 Ohm Input MSC ..... 1.914.530.00
* High Level Input w. Trafo (PFL Opt) MSC ..... 1.914.531.00
* Flip-Flop MSC ..... 1.914.532.00


* This information is supplied according to the customer's requirements
* Diese Informationen werden kundenspezifisch bestückt

* 90° Filter MSC ..... 1.914.533.00
* Dual VOX Detector MSC ..... 1.914.534.00
* Tel Trafo Unit MSC ..... 1.914.536.00
* Mic Amp. with Limiter MSC ..... 1.914.539.00
* Fader-VCA Control Voltage IF MSC ..... 1.914.540.00

Stabilizer 5/24 V ..... 1.915.106.00

* Stabilizer -24 V/+48 V ..... 1.915.107.00

Stabilizer 5/24 V 5 A ..... 1.915.108.00

Diodes/Power Alarm 2 Board ..... 1.915.109.00

Power Supply LED 3-6 V ..... 1.915.111.81

Power Alarm/Fail 4 Board ..... 1.915.112.00

Monitor Amplifier A ..... 1.915.304.00

* Distr. Amp. 1 Inp/6 Out ..... 1.915.307.81
* Distr. Amp. 1 Inp/4 Out ..... 1.915.308.81
* 5 W Power Amplifier ..... 1.915.410.00
* 5 W Power Amplifier w. Input Trafo ..... 1.915.411.00
* 5 W Amp. w. Mute Switch ..... 1.915.412.00
* 5 W Amp. w. Trafo + Mute ..... 1.915.413.00
* 5 W Amp. w. VCA ..... 1.915.414.00
* 5 W Amp. w. Inp. Trafo + VCA ..... 1.915.415.00
* 40 W Power Amp. Trafoless Inp. ..... 1.915.440.00
* 40 W Power Amp. w. Input Trafo ..... 1.915.441.00

5/1 Switch A ..... 1.915.601.81
- Monitor Relays

4/2 Switch A ..... 1.915.602.81
- Monitor Relays

* Fader Start Relays 9 A ..... 1.915.603.81
* Relays 8/1 A Mono (8 In/1 Out) ..... 1.915.605.00
* Bistabil Relays 5/1 A Mono ..... 1.915.607.00

* This information is supplied according to the customer's requirements
* Diese Informationen werden kundenspezifisch bestückt

* Bistabil Relays 5/1 A Stereo ..... 1.915.608.00
* Dual Limiter ..... 1.915.700.00
* Telephone Hybrid ..... 1.915.760.81
* Telephone Relays ..... 1.915.762.81
* Telephone Hybrid with Noise Gate ..... 1.915.764.00
* Current Adjust to Hybrid Unit ..... 1.915.765.00

MSC Mother Board ..... 1.915.770.00

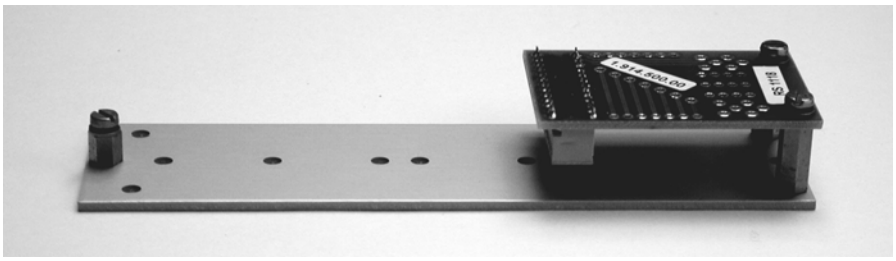
* Microphone Amplifier "900 A" ..... 1.915.780.00
* Stereo Bal. Amplifier w. Trafo ..... 1.915.904.81
* 4 Ch Bal. Amp. Trafoless 6 dB ..... 1.915.914.00
* 4 Ch Bal. Amp. Trafoless 16 dB ..... 1.915.915.00
* Dual Line Amplifier (Low Z) ..... 1.915.922.00
* Stereo Bal. Amp. w. Insert Switch ..... 1.915.924.00
* Studio Relays ..... 1.916.001.00
* Relays Unit (4 x 2 u) ..... 1.916.002.00
* 32 Ch Bus Selector ..... 1.917.110.00
* Monitor Mix Amplifier ..... 1.917.300.00
* Monitoring Amplifier (Film/HDTV) ..... 1.917.305.00
* Monitor Relays 8*2/2 ..... 1.917.601.00
* Signal I/O Interface ..... 1.917.611.00

* This information is supplied according to the customer's requirements
* Diese Informationen werden kundenspezifisch bestückt

## Motherboard for 1 MS-Card 1.914.500

If only one MS-card is used, this motherboard is helpful for both mechanical and electrical interfacing. It consists of an aluminium mounting base (135 × 36 mm) and a small PCB with a connector for the MS-card; for wiring, this PCB contains solder terminals.

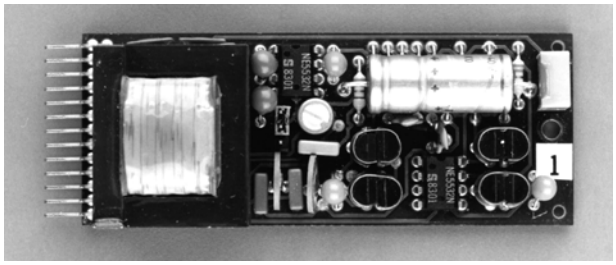
**Note:** For installation of up to four MS-cards, there is a second, Euro-card format motherboard available (1.915.770) that can be installed into an Euro-card rack.

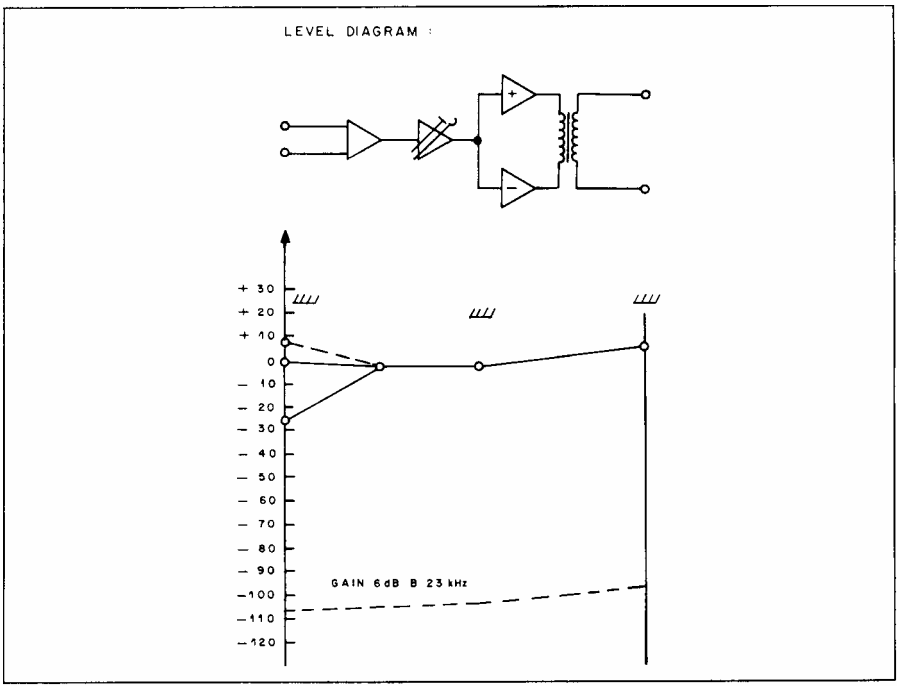


| | | |
|---|---|---|
| **Ordering Information** | Motherboard for 1 MS-card | 1.914.500.xx |

## Line Output Amplifier 1.914.501

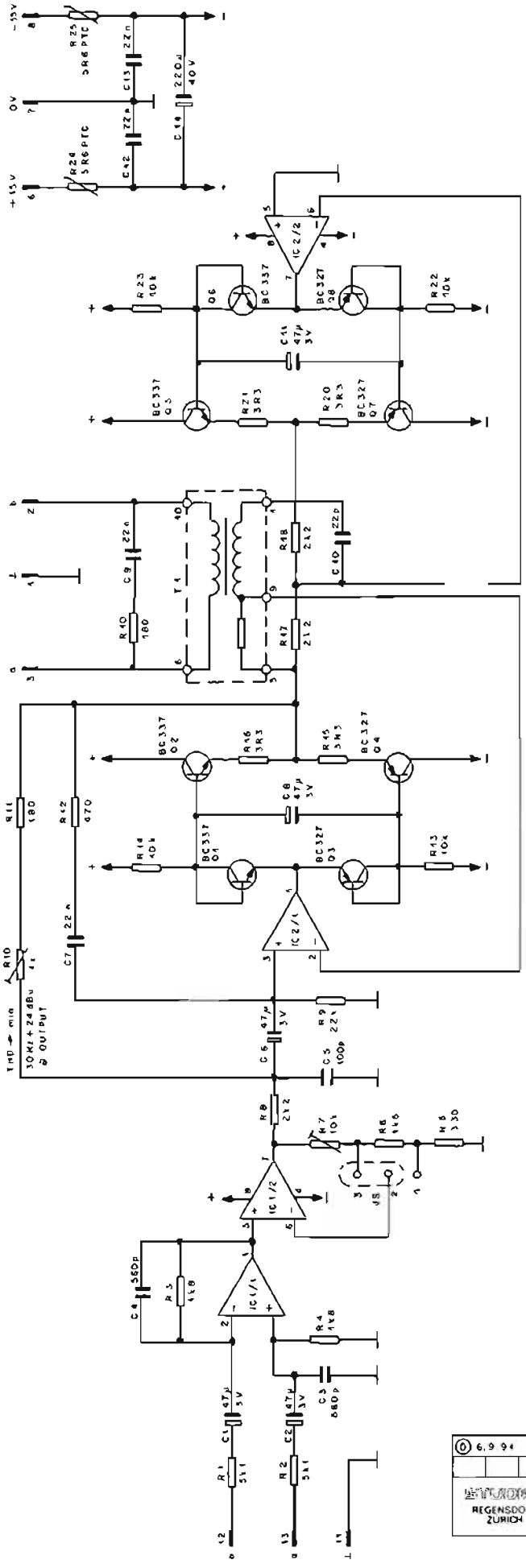
Designed for operation at a nominal line level of +6 dBu (1.55 $V_{rms}$), this amplifier can handle levels of up to +24 dBu (12.3 $V_{rms}$), providing an excellent overload margin without the risk of clipping. A unique circuit around the primary of the amplifier's output transformer ensures excellent frequency response performance throughout the audible range. Fine and coarse gain adjustment is provided which allows to accommodate input levels in the range from –22...+8 dBu for a nominal +6 dBu output.

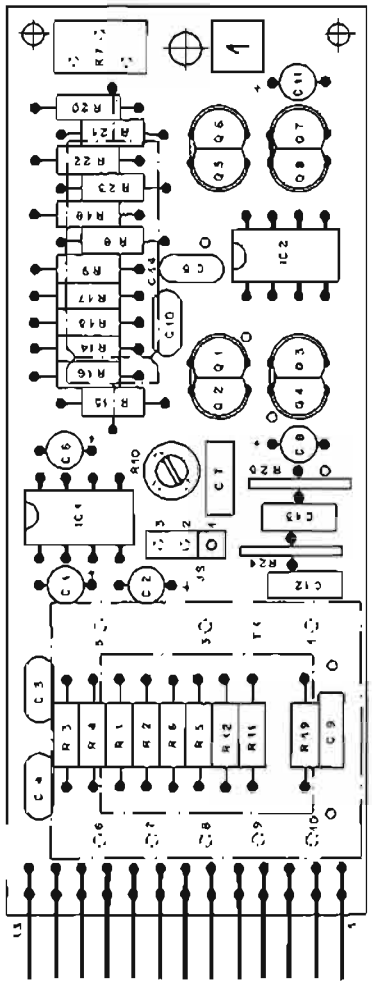


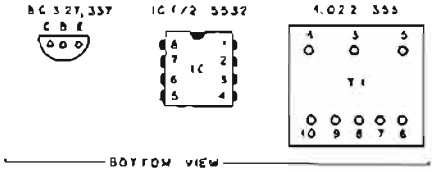


## Technical Specifications

| | | |
|---|---|---|
| **Input:** | Impedance | **> 10 kΩ**, electronically balanced (transformerless) |
| | Overload point | **+24 dBu** |
| **Output:** | Impedance | **< 50 Ω**, balanced and floating |
| | Minimum load | **200 Ω** |
| | Maximum level | **+24 dBu** |
| | Gain | **–2 dB...+28 dB**; adjustment: coarse 0 or 15 dB, fine –2 dB...+13 dB |
| | Frequency response | **±0.2 dB**, 30 Hz...16 kHz |
| | THD | **< 0.01%**, 30 Hz...16 kHz |
| | Equivalent input noise | **< –106 dB**, linear, at 6 dB gain |
| **Supply:** | | **±15 V** (25 mA idling; max. 170 mA at +24 dBu into 200 Ω |
| **Dimensions:** | | **MS-card**, 34 × 85 mm |
| **Ordering Information:** | | Line output amplifier 1.914.501.xx |








| PIN | | EURO 32 PIN | | | |
|---|---|---|---|---|---|
| | | b | d | c | a |
| INP a | 13 | 1 | 7 | 21 | 27 |
| INP b | 12 | 2 | 8 | 22 | 28 |
| ⊥ | 11 | 3 | 9 | 23 | 29 |
| OUT a | 3 | 4 | 10 | 24 | 30 |
| OUT b | 2 | 5 | 11 | 25 | 31 |
| ⊥ | 1 | 6 | 13 | 26 | 32 |
| + 15 V | 6 | 16 | | | |
| 0 V | 7 | 15 | | | |
| - 15 V | 8 | 14 | | | |

| | | | |
|---|---|---|---|
| 6.9.94 | | | |
| STUDER REGENSDORF ZURICH | LINE AMPLIFIER (NR 1) | | SC 1.914.501.00 |

# MSC LINE AMPLIFIER

| Ad | POS | REF No. | DESCRIPTION | | | | MANUFACTURER |
|---|---|---|---|---|---|---|---|
| ① | C. . . . 1 | 59.30.1470 | 47µ | 3V | TA | | |
| ① | C . . .2 | 59.30.1470 | 47µ | 3V | TA | | |
| | C . . .3 | 59.34.5561 | 560pF | 5% | CER | | |
| | C. . . .4 | 59.34.5561 | 560pF | 5% | CER | | |
| | C. . . . .5 | 59.34.4101 | 100pF | | CER | | |
| | C. . . . .6 | 59.30.1470 | 47µF | 3V | TA | | |
| | C. . . . .7 | 59.06.0222 | 2200pF | | PE | | |
| | C. . . .8 | 59.30.1470 | 47µF | 3V | TA | | |
| | C. . .9 | 59.06.0223 | 0,022µF | | PE | | |
| | C. . . .10 | 59.34.2220 | 22pF | | CER | | |
| | C. . . .11 | 59.30.1470 | 47µF | 3V | TA | | |
| | C. . . .12 | 59.06.0223 | 0,022µF | | PE | | |
| | C. . . .13 | 59.06.0223 | 0,022µF | | PE | | |
| | C . .14 | 59.25.5221 | 220µF | 40V | EL | | |
| | IC. . . .1 | 50.09.0105 | NE5532 | XR5532 DUAL OP LOW NOISE | | | SIG/EX |
| | IC. . . .2 | 50.09.0105 | NE5532 | XR5532 DUAL OP LOW NOISE | | | SIG/EX |
| | JSI | 54.01.0021 | | JUMPER JACK | | | |
| | JSP | 54.01.0020 | | JUMPER PLUG 3PIN | | | |
| | Q. . . . .1 | 50.03.0516 | BC337 | NPN IC 0,8A | ] | MATCHED | ST |
| | Q. . . . 2 | 50.03.0516 | BC337 | NPN IC 0,8A | ] | | ST |
| | Q. . .3 | 50.03.0625 | BC327 | PNP IC 0,8A | ] | MATCHED | ST |
| | Q. . 4 | 50.03.0625 | BC327 | PNP IC 0,8A | ] | | ST |
| | Q. . .5 | 50.03.0516 | BC337 | NPN IC 0,8A | ] | MATCHED | ST |
| | Q. . .6 | 50.03.0516 | BC337 | NPN IC 0,8A | ] | | ST |
| | Q . . . .7 | 50.03.0625 | BC327 | PNP IC 0,8A | ] | MATCHED | ST |
| | Q. . . . 8 | 50.03.0625 | BC327 | PNP IC 0,8A | ] | | ST |
| | R. . 1 | 57.11.3512 | 5k1 | 1% | | | |
| | R. . .2 | 57.11.3512 | 5k1 | 1% | | | |
| | R. . .3 | 57.11.3182 | 1k8 | 1% | | | |
| | R. . . 4 | 57.11.3182 | 1k8 | 1% | | | |
| | R. . . .5 | 57.11.4331 | 330 | | | | |
| | R. . .6 | 57.11.4152 | 1k5 | | | | |
| | R. . . . .7 | 58.11.9103 | 10k | TRIM LIN | | | |
| | R. . . .8 | 57.11.4222 | 2k2 | | | | |
| | R. . . . .9 | 57.11.4223 | 22k | | | | |
| | R. .10 | 58.11.6102 | 1k | TRIM LIN | | | |
| | R. . . .11 | 57.11.4681 | 680 | | | | |
| | R. . .12 | 57.11.4471 | 470 | | | | |
| | R. . 13 | 57.11.4103 | 10k | | | | |
| | R. . .14 | 57.11.4103 | 10k | | | | |
| | R. . 15 | 57.11.4339 | 3,3 | | | | |
| | R. . . .16 | 57.11.4339 | 3,3 | | | | |
| | R. . 17 | 57.11.4222 | 2k2 | | | | |
| | R. . . .18 | 57.11.4222 | 2k2 | | | | |
| | R . . .19 | 57.11.4181 | 180 | | | | |
| | R. . . .20 | 57.11.4339 | 3,3 | | | | |
| | R. . . .21 | 57.11.4339 | 3,3 | | | | |
| | R. . . .22 | 57.11.4103 | 10k | | | | |
| | R. . .23 | 57.11.4103 | 10k | | | | |
| | R. . .24 | 57.11.0209 | 5,6 | PTC | | | PH |
| | R. . . .25 | 57.11.0209 | 5,6 | PTC | | | PH |
| | | 50.20.2001 | | CLIP | | | |
| | T. . . . .1 | 1.022.355.00 | | LINE OUTPUT TRAFO | | | ST |

CER=Ceramic, EL=Electrolytic, PE=Polyester, TA=Tantalum

MANUFACTURER: ST=Studer, SIG=Signetics, EX=Exar, PH=Philips

1.914.501.00 LINE AMPLIFIER (Nr. 1) FRI 06/06/83

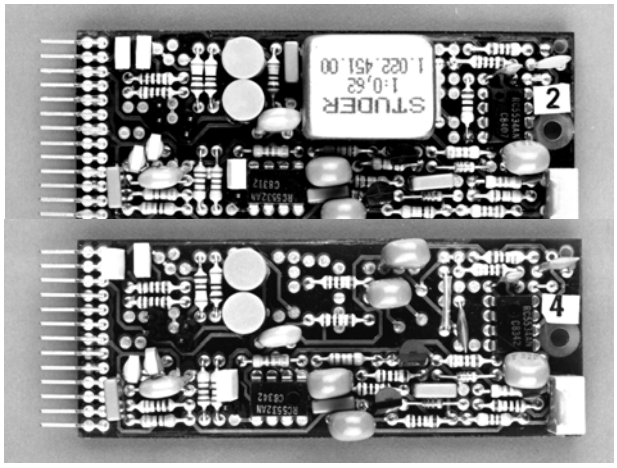
① 1.914.501.00 LINE AMPLIFIER (Nr. 1) ① FRI 17/11/83

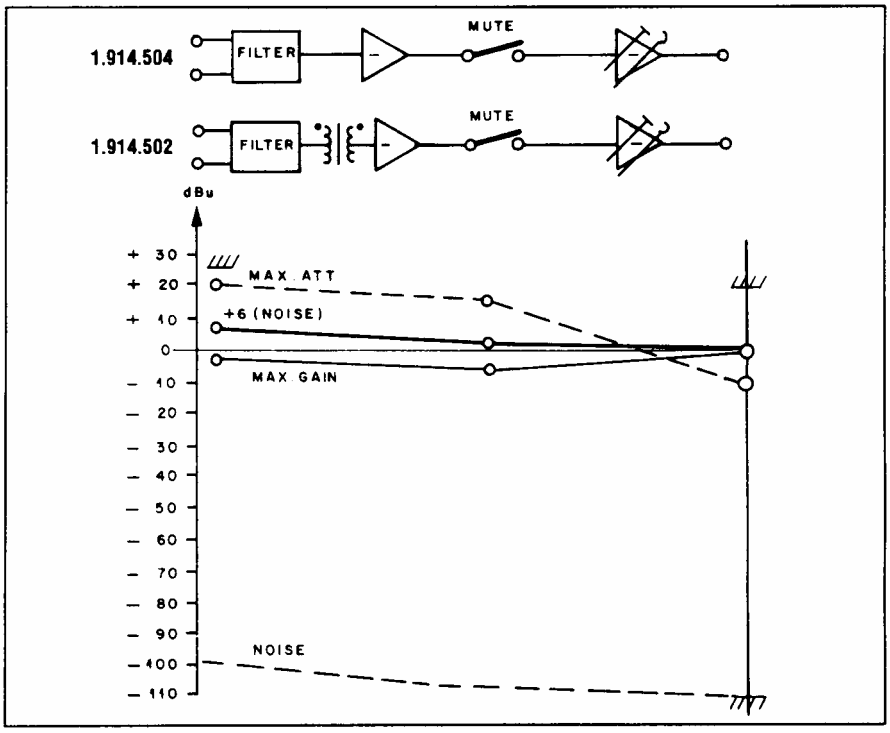
END

→

## High-Level Input Amplifier 1.914.502/504

Basically, this is an amplifier with near 0 dB gain for high-level applications, yet with additional features, such as remote muting facility, RF input filter, and choice of two input and output impedances. The input configuration is balanced, whereas the output is unbalanced. Jumpers in the primary of the input circuit permit selection of either high-impedance operation with RF filter or a 0-Ω input without filter, for summing-bus applications. The combining (mixing) resistors have to be added externally. By switching pin3 of the amplifier's 13-pin plug to ground (via a corresponding connection on the motherboard) the amplifier may be muted from a remote point. If only 20 dB level reduction is desirable instead of muting, this can be programmed by connecting a resistor across two solder points.




The amplifier may be used, for example, to work into a 600 Ω load, or into the input of a 0-Ω input amplifier of another summing circuit.

If transformerless yet balanced input configuration is desired, an MSC amplifier with basically the same performance characteristics is available as well. Refer to the ordering information below.

## Technical Specifications

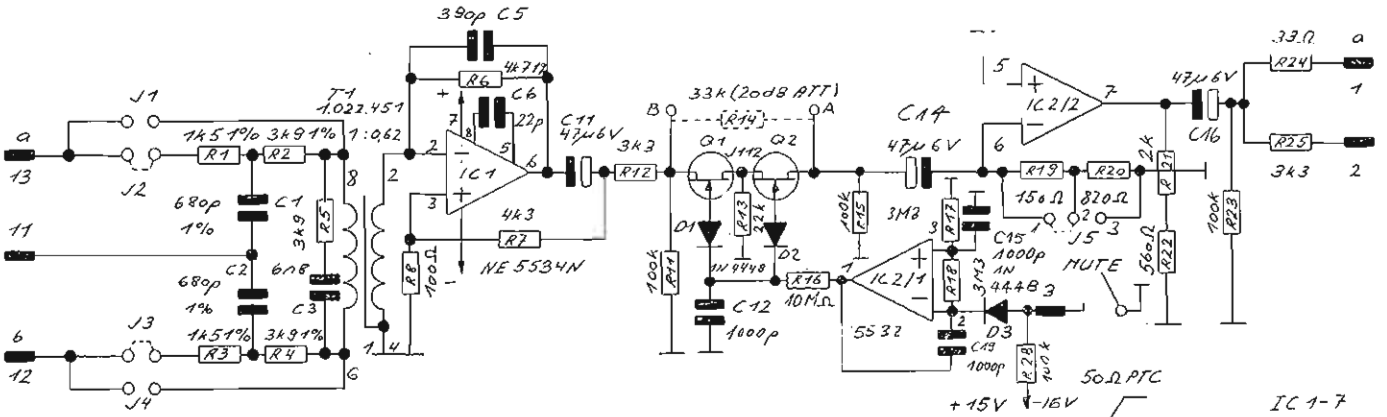
| | | |
|---|---|---|
| **Input:** | Impedance | **> 10 kΩ** (transformer- or electronically balanced versions available; input with RF filter; 0-Ω input selectable with jumpers) |
| | Common mode rejection | **> 50 dB** |
| | Overload point | **+24 dBu** (12.3 $V_{rms}$) |
| **Output:** | Impedance | **33 Ω** (pin1), unbalanced |
| | Minimum load | **600 Ω** |
| | Maximum level | **+20 dBu** (7.75 $V_{rms}$) |
| | Impedance | **3.3 kΩ** (pin2), unbalanced, for 0-Ω operation |
| | Maximum gain | **1 dB** |
| | Maximum attenuation | **30 dB** |
| | Frequency response | **±0.3 dB**, 30 Hz...16 kHz |
| | THD | **< 0.03%**, 30 Hz...16 kHz |
| | Equivalent input noise | **–100 dBu**, unweighted, at 6 dB attenuation |
| | Programmable attenuation | **20 dB** (resistor 33 kΩ across muting circuit) |
| **Supply:** | | **±15 V** (11 mA idling) |
| **Dimensions:** | | **MS-card**, 34 × 85 mm |

| | | |
|---|---|---|
| **Ordering Information:** | High level input amp with transformer-balanced input | 1.914.502.xx |
| | High level input amp with electronically balanced input | 1.914.504.xx |

STUDER

| | ① | ② | |
|---|---|---|---|
| 0 | 19.4.85 | 8.2.93 | |
| | 7.11.85 | | |

| CIS PIN | | EURO 32 P a | b | c | d |
|---|---|---|---|---|---|
| IN a | 13 | 1 | 7 | 21 | 27 |
| IN b | 12 | 2 | 8 | 22 | 28 |
| IN ⊥ | 11 | 3 | 9 | 23 | 29 |
| | 10 | | | | |
| | 9 | | | | |
| -15V | 8 | 14 | | | |
| 0 V | 7 | 15 | | | |
| +15V | 6 | 16 | | | |
| | 5 | | | | |
| | 4 | | | | |
| MUTE Σ | 3 | 4 | 10 | 24 | 30 |
| OUT (3k3) | 2 | 5 | 11 | 25 | 31 |
| OUT | 1 | 6 | 13 | 26 | 32 |




GAIN

Adjustable (see level diagram)

| | |
|---|---|
| Max. gain | $V_{max}$ = + 1 dB |
| Max. attenuation | $V_{min}$ = -30 dB |

GENERAL

| | | |
|---|---|---|
| Frequency response | 30Hz ... 16kHz | $\overset{0}{\underset{-0,3}{}}$ dB |
| THD amplifier | 30Hz ... 16kHz | THD ≤ -70 dB |
| Noise (B 23kHz), gain -6 dB | | $U_{NOISE}$ = -106 dBu |

ATTENUATOR

Mute switch, with resistor programable to a attenuator of 20 dB

SUPPLY

| | |
|---|---|
| Supply voltage | U = ± 15 V |
| Idle current | I = 11 mA |

INPUT

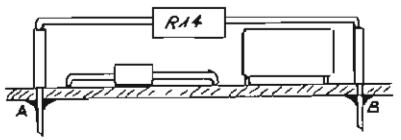
Balanced, floating, RF-filter

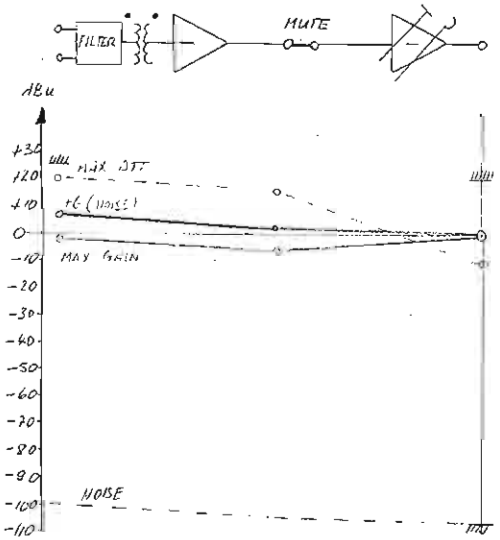
| | |
|---|---|
| Input impedance | $R_i$ > 10 kΩ |
| 0Ω input with jumper | |
| Max. input level | $U_{in}$ = +24 dBu |
| Common mode rejection ratio | > 50 dB |
| Source impedance | $R_s$ ≤ 200 Ω |

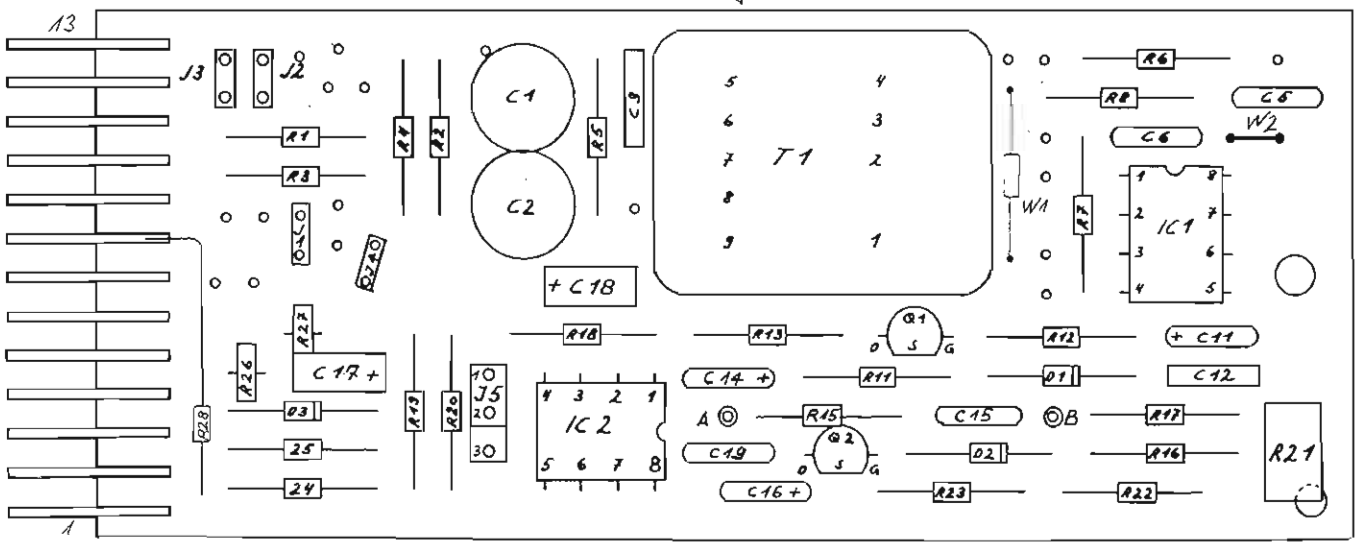
OUTPUT

| | |
|---|---|
| Max. output level | $U_{out}$ = +20 dBu |
| Output impedance pin 1 | $R_{out}$ = 33 Ω |
| Load | $R_L$ ≥ 600 Ω |
| Output impedance pin 2 (to a 0Ω amp.) | $R_{out}$ = 3k3 |

OPTION
33k (20 dB Attenuation)




| | |
|---|---|
| MATERIAL | NUMBER |
| HL INPUT AMP. PCB (Nr 2) | 1.914.502.00 |
| | PAGE 1 OF 1 |

# HL Input Amp, transformer-balanced 1.914.502.81 ( 1)



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.05.1681 | | 680p | PP, 1%, 630V |
| 0 | C 2 | 59.05.1681 | | 680p | PP, 1%, 630V |
| 0 | C 3 | 59.06.5682 | | 6n8 | PETP, 63V, 5%, RM5 |
| 0 | C 5 | 59.34.5391 | | 390p | CER 63V, 5%, N1500 |
| 0 | C 6 | 59.34.2220 | | 22p | CER 63V, 5%, N150 |
| 0 | C 11 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 12 | 59.32.4102 | | 1n0 | CER 20%, 50V |
| 0 | C 13 | not used | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 14 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 15 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 16 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 17 | 59.26.2689 | | 6u8 | SAL 16V 20% |
| 0 | C 18 | 59.26.2689 | | 6u8 | SAL 16V 20% |
| 0 | C 19 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | D 1 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 2 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 3 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | IC 1 | 50.05.0244 | | 5534A | Single Op-amp, low noise |
| 0 | IC 2 | 50.09.0106 | | 5532A | Dual Op-Amp, low noise |
| 0 | J 1 | 54.01.0021 | | Jumper | 0.63*0.63mm, Au |
| 0 | J 2 | 54.01.0021 | | Jumper | 0.63*0.63mm, Au |
| 0 | J 3 | 54.01.0021 | | Jumper | 0.63*0.63mm, Au |
| 0 | P 1 | 54.01.0273 | | 13p | Stecker CIS parallelsteck |
| 0 | P 2 | 54.01.0020 | 11 pcs | 1p | Pin, 1reihig, gerade |
| 0 | Q 1 | 50.03.0350 | | J112 | JFET N-Channel |
| 0 | Q 2 | 50.03.0350 | | J112 | JFET N-Channel |
| 0 | R 1 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 2 | 57.11.3392 | | 3k9 | MF, 1%, 0207 |
| 0 | R 3 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 4 | 57.11.3392 | | 3k9 | MF, 1%, 0207 |
| 0 | R 5 | 57.11.3392 | | 3k9 | MF, 1%, 0207 |
| 0 | R 6 | 57.11.3472 | | 4k7 | MF, 1%, 0207 |
| 0 | R 7 | 57.11.3432 | | 4k3 | MF, 1%, 0207 |
| 0 | R 8 | 57.11.3101 | | 100R | MF, 1%, 0207 |
| 0 | R 11 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 12 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 13 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 14 | not used | | 33k | MF, 1%, 0207 |
| | | | | *optional (20 dB attenuation)* | |
| 0 | R 15 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 16 | 57.11.5106 | | 10M | MF, 5%, 0207 |
| 0 | R 17 | 57.11.5335 | | 3M3 | MF, 5%, 0207 |
| 0 | R 18 | 57.11.5335 | | 3M3 | MF, 5%, 0207 |
| 0 | R 19 | 57.11.3151 | | 150R | MF, 1%, 0207 |
| 0 | R 20 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 21 | 58.01.9202 | | 2k0 | Cermet, 10%, 0.5W, vertical |
| 0 | R 22 | 57.11.3561 | | 560R | MF, 1%, 0207 |
| 0 | R 23 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 24 | 57.11.3330 | | 33R | MF, 1%, 0207 |
| 0 | R 25 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 26 | 57.99.0206 | | 50R | PTC, 25V, 0.5W |
| 0 | R 27 | 57.99.0206 | | 50R | PTC, 25V, 0.5W |
| 0 | R 28 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | T 1 | 1.022.451.00 | | 1:0.62 | EINGANGSTRAFO 1 : 0,62 |
| 1 | W 1 | 57.11.3000 | | 0R0 | MF, 0207 |
| 1 | W 2 | 64.01.0106 | | 0.6mm | Schaltdraht Cu |

**End of List**

**Comments:**

(01) W1, W2 added

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|

STUDER

| | | |
|---|---|---|
| ① 19.4.85 qkr | ② 8.2.93 ph | |
| 14.10.85 qkr | | |

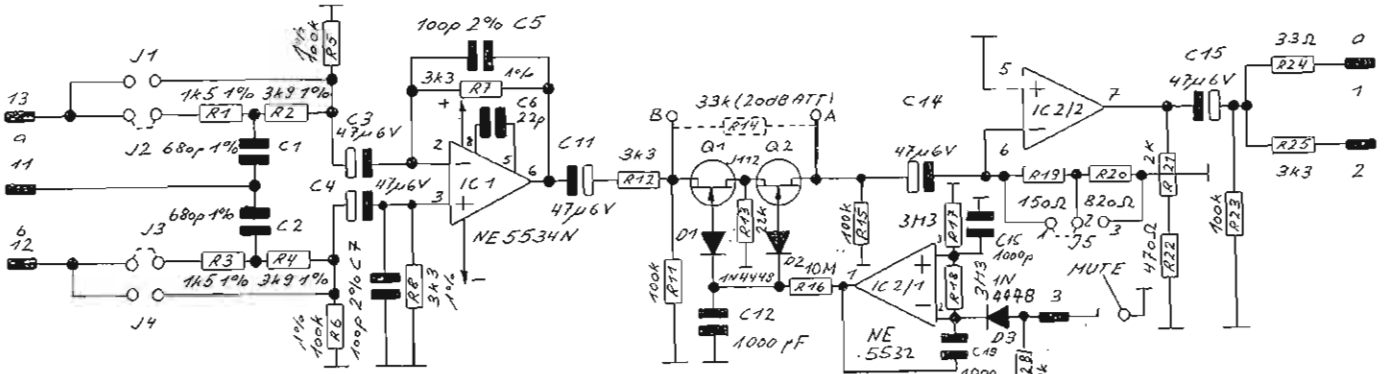
# IN. INPUT AMP. BALANCED (INPA)

| | | |
|---|---|---|
| 1.944.504.81 | | |

PAGE 1 OF 1

C1S

| | PIN | EURO 32 P | | | |
|---|---|---|---|---|---|
| | | a | b | c | d |
| IN a | 13 | 1 | 7 | 21 | 27 |
| IN b | 12 | 2 | 8 | 22 | 28 |
| IN ⊥ | 11 | 3 | 9 | 23 | 29 |
| | 10 | | | | |
| | 9 | | | | |
| -15V | 8 | 14 | | | |
| 0 V | 7 | 15 | | | |
| +15V | 6 | 16 | | | |
| | 5 | | | | |
| | 4 | | | | |
| MUTE Σ | 3 | 4 | 10 | 24 | 30 |
| OUT (3k3) | 2 | 5 | 11 | 25 | 31 |
| OUT | 1 | 6 | 13 | 26 | 32 |




## INPUT

Balanced, RF-filter

| | |
|---|---|
| Input impedance | $R_i$ > 10 kΩ |
| 0Ω input with jumper | |
| Max. input level | Uin = +24 dBu |
| Source impedance | $R_S$ ⩽ 200 Ω |

## OUTPUT

| | |
|---|---|
| Max. output level | $U_{out}$ = +20 dBu |
| Output impedance pin 1 | $R_{out}$ = 33 Ω |
| Load | $R_L$ ⩾ 600 Ω |
| Output impedance pin 2 (to a 0Ω amp.) | $R_{out}$ = 3k3 |

## GAIN

Adjustable (see level diagram)

| | |
|---|---|
| Max. gain | $V_{max}$ = + 1 dB |
| Max. attenuation | $V_{min}$ = -30 dB |

## GENERAL

| | | |
|---|---|---|
| Frequency response | 30Hz ... 15kHz | $\overset{0}{\pm}$0,3 dB |
| THD amplifier | 30Hz ... 16kHz | THD ⩽ 80 dB |
| Noise (B 23kHz), gain -6 dB | | $U_{NOISE}$ = -107 dBu |

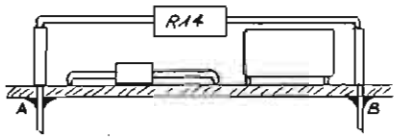
## ATTENUATOR

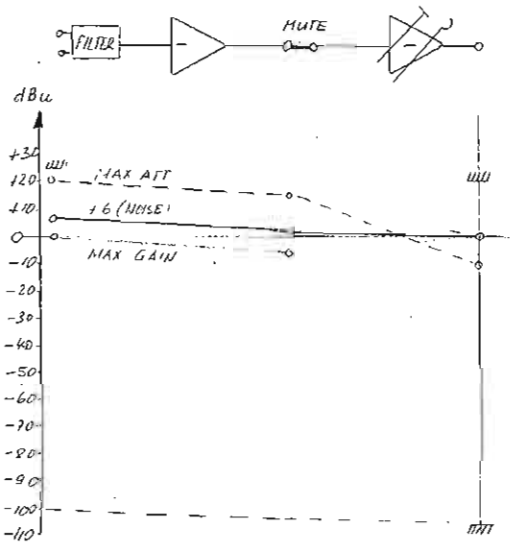
Mute switch, with resistor programable to a attenuator of 20 dB

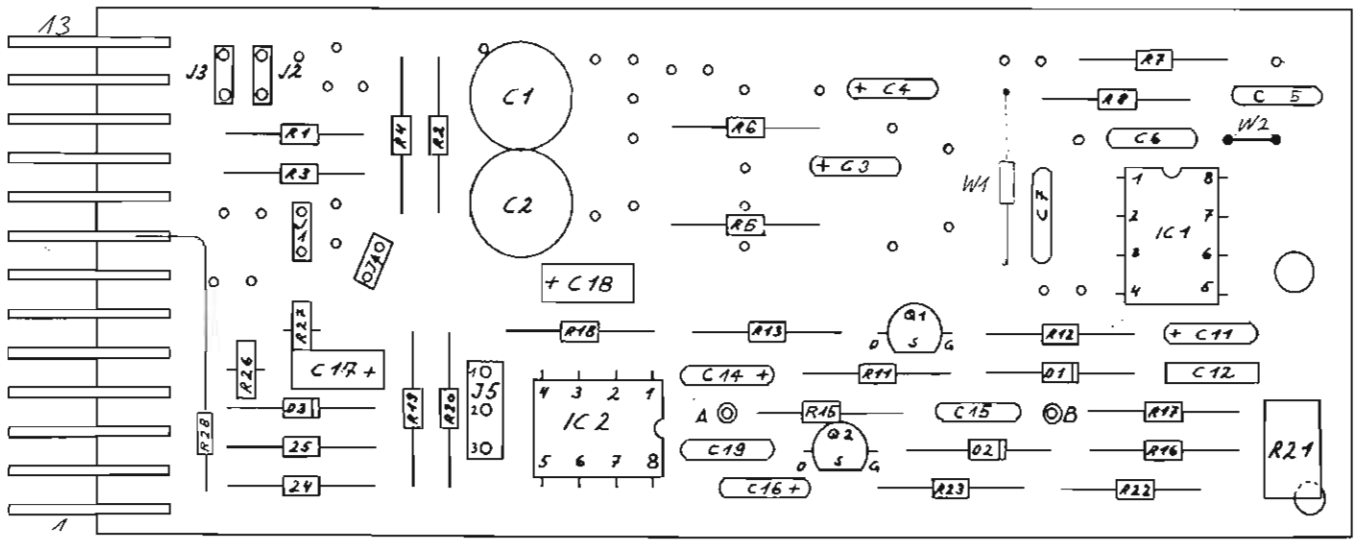
## SUPPLY

| | |
|---|---|
| Supply voltage | U = ± 15 V |
| Idle current | I = 11 mA |

OPTION
33k (20 dB Attenuation)



# HL Input Amp, electronically balanced 1.914.504.81 ( 1)



| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|
| 0 | C 1 | 59.05.1681 | | 680p | PP, 1%, 630V |
| 0 | C 2 | 59.05.1681 | | 680p | PP, 1%, 630V |
| 0 | C 3 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 4 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 5 | 59.34.2101 | | 100p | CER 63V, 5%, N150 |
| 0 | C 6 | 59.34.2220 | | 22p | CER 63V, 5%, N150 |
| 0 | C 7 | 59.34.2101 | | 100p | CER 63V, 5%, N150 |
| 0 | C 11 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 12 | 59.32.4102 | | 1n0 | CER 20%, 50V |
| 0 | C 14 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 15 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | C 16 | 59.26.0470 | | 47u | SAL 6.3V 20% |
| 0 | C 17 | 59.26.2689 | | 6u8 | SAL 16V 20% |
| 0 | C 18 | 59.26.2689 | | 6u8 | SAL 16V 20% |
| 0 | C 19 | 59.06.0102 | | 1n0 | PETP, 63V, 10%, RM5 |
| 0 | D 1 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 2 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | D 3 | 50.04.0125 | | 1N4448 | 75V, 150mA, 4ns, DO-35 |
| 0 | IC 1 | 50.05.0244 | | 5534A | Single Op-amp, low noise |
| 0 | IC 2 | 50.09.0106 | | 5532A | Dual Op-Amp, low noise |
| 0 | J 1 | 54.01.0021 | | Jumper | 0.63*0.63mm, Au |
| 0 | J 2 | 54.01.0021 | | Jumper | 0.63*0.63mm, Au |
| 0 | J 3 | 54.01.0021 | | Jumper | 0.63*0.63mm, Au |
| 0 | P 1 | 54.01.0273 | | 13p | Stecker CIS parallelsteck |
| 0 | P 2 | 54.01.0020 | 9 pcs | 1p | Pin, 1reihig, gerade |
| 0 | Q 1 | 50.03.0350 | | J112 | JFET N-Channel |
| 0 | Q 2 | 50.03.0350 | | J112 | JFET N-Channel |
| 0 | R 1 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 2 | 57.11.3392 | | 3k9 | MF, 1%, 0207 |
| 0 | R 3 | 57.11.3152 | | 1k5 | MF, 1%, 0207 |
| 0 | R 4 | 57.11.3392 | | 3k9 | MF, 1%, 0207 |
| 0 | R 5 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 6 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 7 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 8 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 11 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 12 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 13 | 57.11.3223 | | 22k | MF, 1%, 0207 |
| 0 | R 14 | not used | | 33k | MF, 1%, 0207 |
| | | | | *optional (20 dB attenuation)* | |
| 0 | R 15 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 16 | 57.11.5106 | | 10M | MF, 5%, 0207 |
| 0 | R 17 | 57.11.5335 | | 3M3 | MF, 5%, 0207 |
| 0 | R 18 | 57.11.5335 | | 3M3 | MF, 5%, 0207 |
| 0 | R 19 | 57.11.3151 | | 150R | MF, 1%, 0207 |
| 0 | R 20 | 57.11.3821 | | 820R | MF, 1%, 0207 |
| 0 | R 21 | 58.01.9202 | | 2k0 | Cermet, 10%, 0.5W, vertical |
| 0 | R 22 | 57.11.3471 | | 470R | MF, 1%, 0207 |
| 0 | R 23 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 0 | R 24 | 57.11.3330 | | 33R | MF, 1%, 0207 |
| 0 | R 25 | 57.11.3332 | | 3k3 | MF, 1%, 0207 |
| 0 | R 26 | 57.99.0206 | | 50R | PTC, 25V, 0.5W |
| 0 | R 27 | 57.99.0206 | | 50R | PTC, 25V, 0.5W |
| 1 | R 28 | 57.11.3104 | | 100k | MF, 1%, 0207 |
| 1 | W 1 | 57.11.3000 | | 0R0 | MF, 0207 |
| 1 | W 2 | 64.01.0106 | | 0.6mm | Schaltdraht Cu |

**End of List**

**Comments:**

(01) R28, W1, W2 added

| Idx. | Pos. | Part No. | Qty. | Type/Val. | Description |
|---|---|---|---|---|---|