



ALEPH P SERVICE MANUAL

REV 1.7

PASS LABORATORIES
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PRODUCT DESCRIPTION Version 1.7

The ALEPH P is a high performance Mosfet Class A audio preamplifier, intended for maximum performance in reproduction of music. It is a simple design, having only a single balanced gain stage consisting of a balanced pair of power Mosfets. The gain stage of the preamplifier is a single Mosfet operated common source and biased by a Mosfet constant current source.

To best understand the operation of the preamplifier, refer to the schematic of the basic gain stage. Q16 and Q19 form the active portion of the gain stage, with Q16 receiving the (+) balanced input

signal, and Q19 receiving the (-) balanced input signal. The inputs are capacitively coupled through C9 and C13. R50 and R65 are employed to prevent parasitic oscillation, and the D5-6 and D7-8 protect the Mosfets from electrostatic high voltages at the input.

The Mosfets amplify the input signals and present them at the outputs, with the polarity inverted, so that the output of Q16 becomes the (-) signal, and the output of Q19 becomes the (+) output.

When using the preamplifier with a single-ended input, the negative input should be shorted to ground for best performance. This is accomplished by using shorting plug between pins 1 and 3 on the XLR input connector.

The power supply transformer delivers approximately 80 volts (for 120 or 240 VAC operation) unregulated DC into C28 and C30, which is then actively regulated down to 60 volts at the output of Q23. Q23 is driven by a stack of Zener diodes and the regulated output is additionally filtered by C27.

The output muting relay is controlled by the circuits of Q21 and Q22. For the relay to activate, both Q21 and Q22 must be conducting. Q22 turns on slowly via the charge on C31, while Q21 will only conduct when there is at least 8 volts difference between regulated and unregulated supplies. Thus Q22 delays relay turn on, and Q21 shuts it off quickly.

The input selection system schematic shows the simple use of relays to switch four inputs with four poles of connection.

The input pad settings are as follows (only 3 settings)

1.3 dB	3,4 5,6	on
9.7 dB	all off	
15 dB	1,2 7,8	on

The volume control system schematic shows the 8 bit binary relay ladder circuits which perform precision attenuation of the output of the gain stages. In order to achieve good common mode rejection performance, the output attenuation must be matched far more

precisely than can be accomplished with potentiometers, and so relays and precision resistors are used.

The control circuitry is located on the front panel PC board of the preamp. The main elements are the micro-controller, latches, infrared receiver and optical encoders.

U201 is a Phillips 87C752 micro-controller running at 12MHz. It receives input from the infrared receiver module via Q204 inverter buffer. The input select and volume controls (OPT200, OPT201) are optical interrupters that generate a quadrature pulse train on pins A and B. These feed interrupt pins on the micro-controller which recognizes rotational direction and speed.

Test points on the front panel:

Collector of Q204 for infrared received commands.

Pins 10 and 11 of U201 for 12 MHz.

Pin 11 of both latches when volume is being changed.

Pins A and B of the optical encoders when they are being turned.

The indicated 5 volt test point or any 5 volt location on the schematic.

Schematics

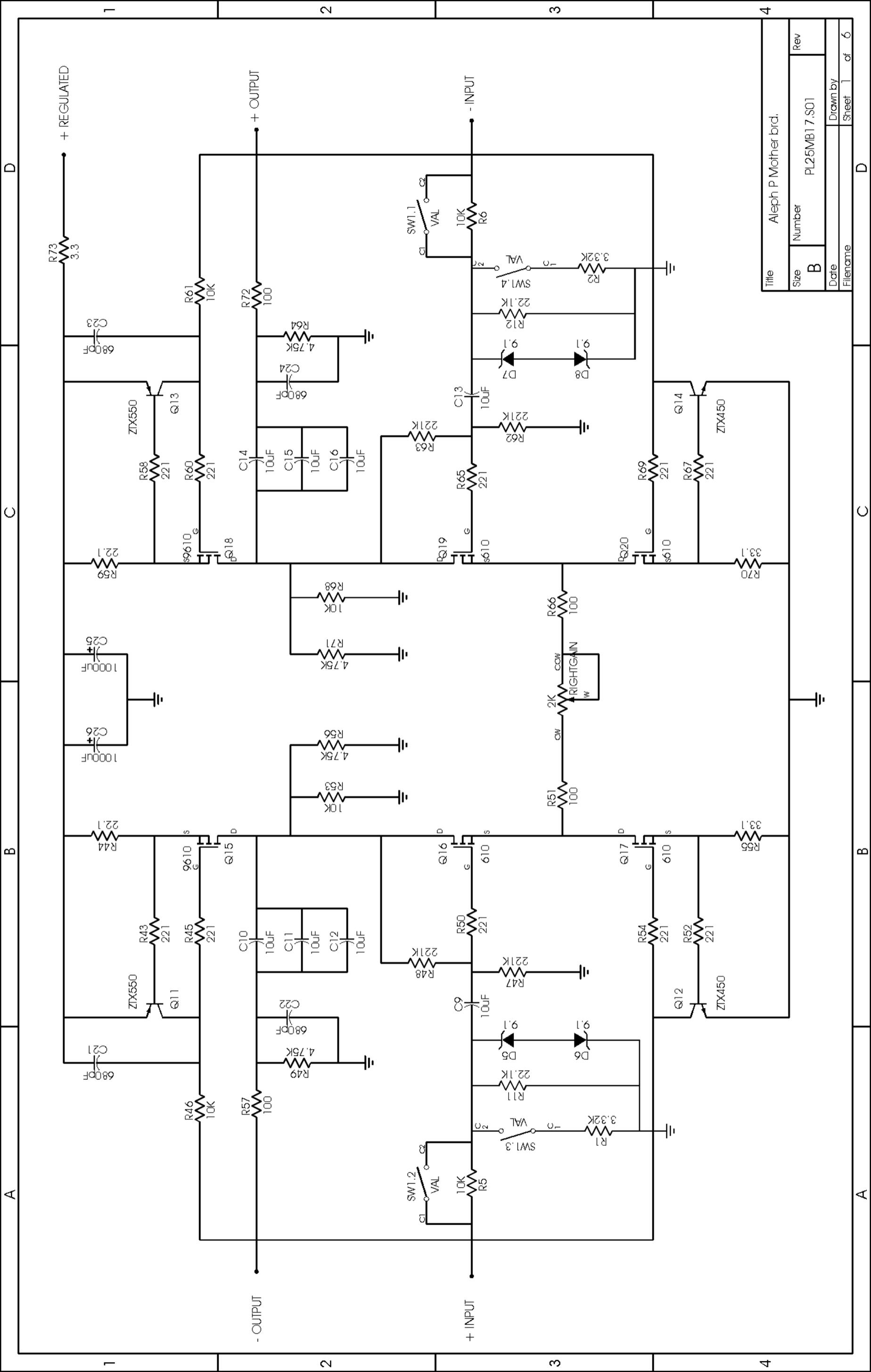
Fig. 1 Mother board main gain stage.

- Fig. 2 Power supply.
- Fig. 3 Volume control.
- Fig. 4 Input select.
- Fig. 5 Display board.
- Fig. 6 Remote control.

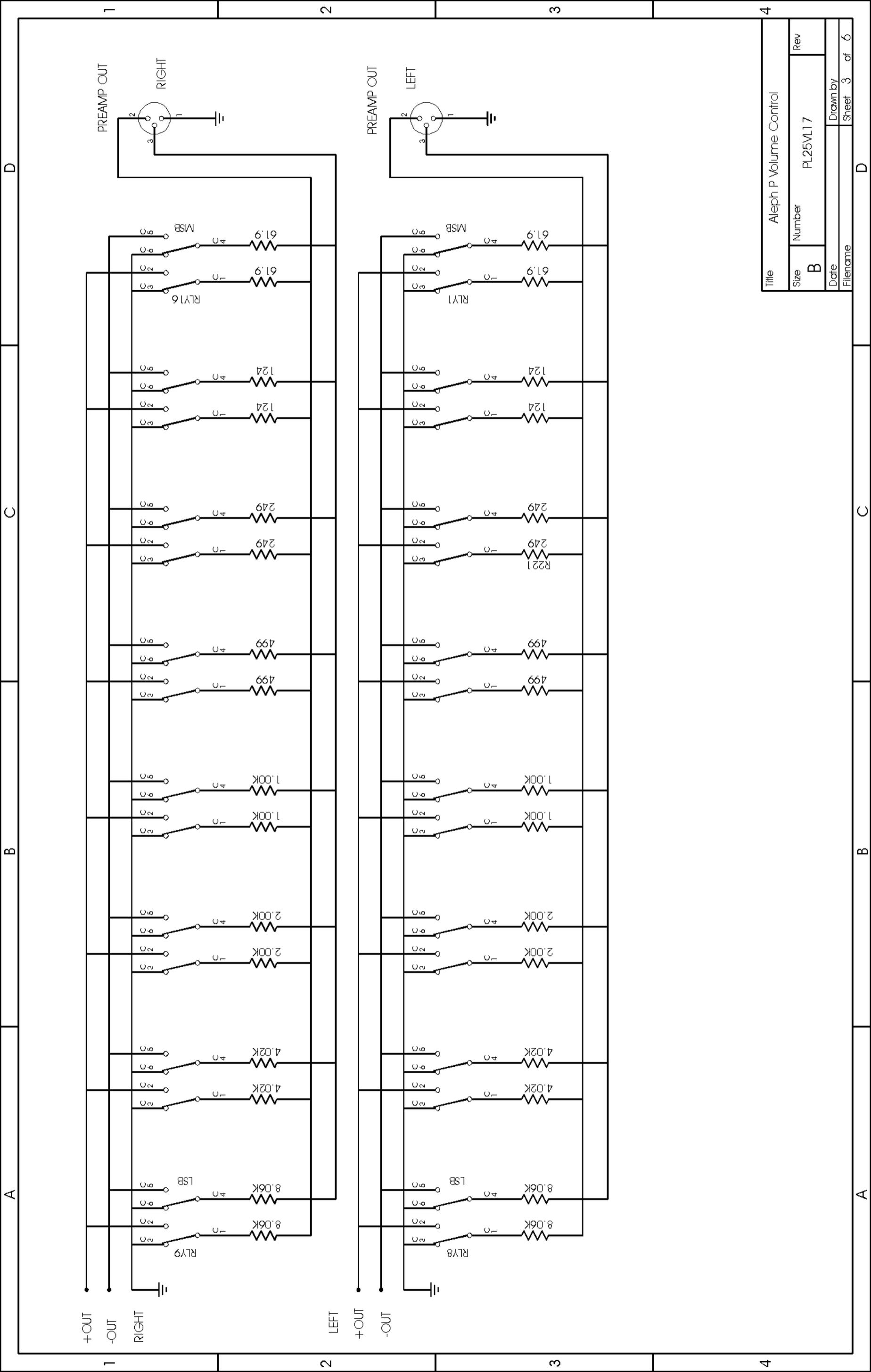
- Fig. 7 Reference designator drawing for mother brd.
- Fig. 8 Reference designator drawing for display brd.

SPECIFICATIONS

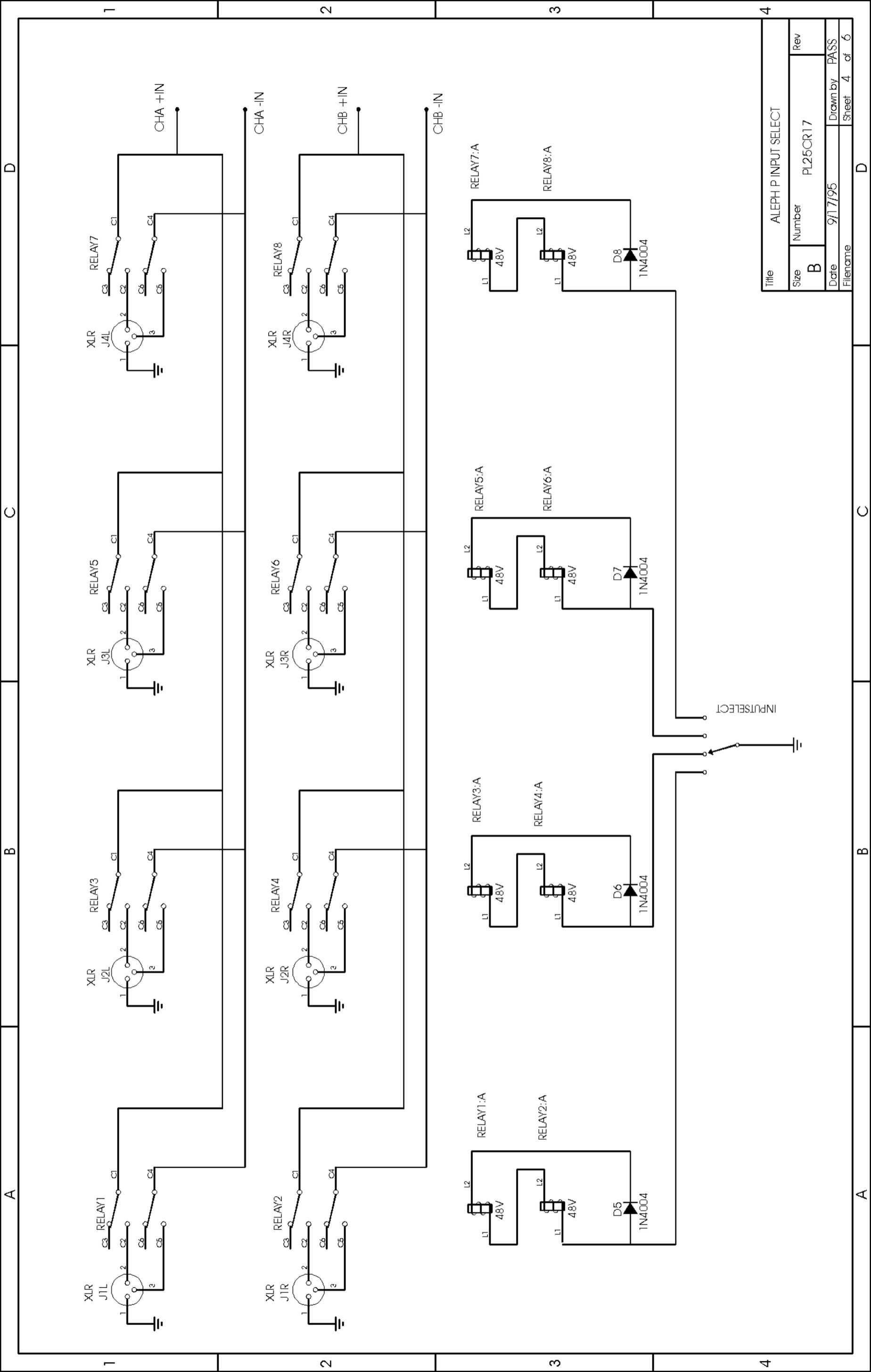
Max Gain	22 dB bal / 16 dB unbal
Freq. Response	-3 dB @ 1Hz, 100 KHz
Distortion	< 1% THD
Max Out	20 volts rms. bal out 10 volts rms. unbal out
Output Impedance	0-800 ohms
Input Impedance	20 KOhm bal 10 KOhm unbal
CMRR	-60 dB
Output noise	5 microvolts, 20-20KHz
Power consumption	25 watts
Dimensions	19" W x 11.5" D x 4" H



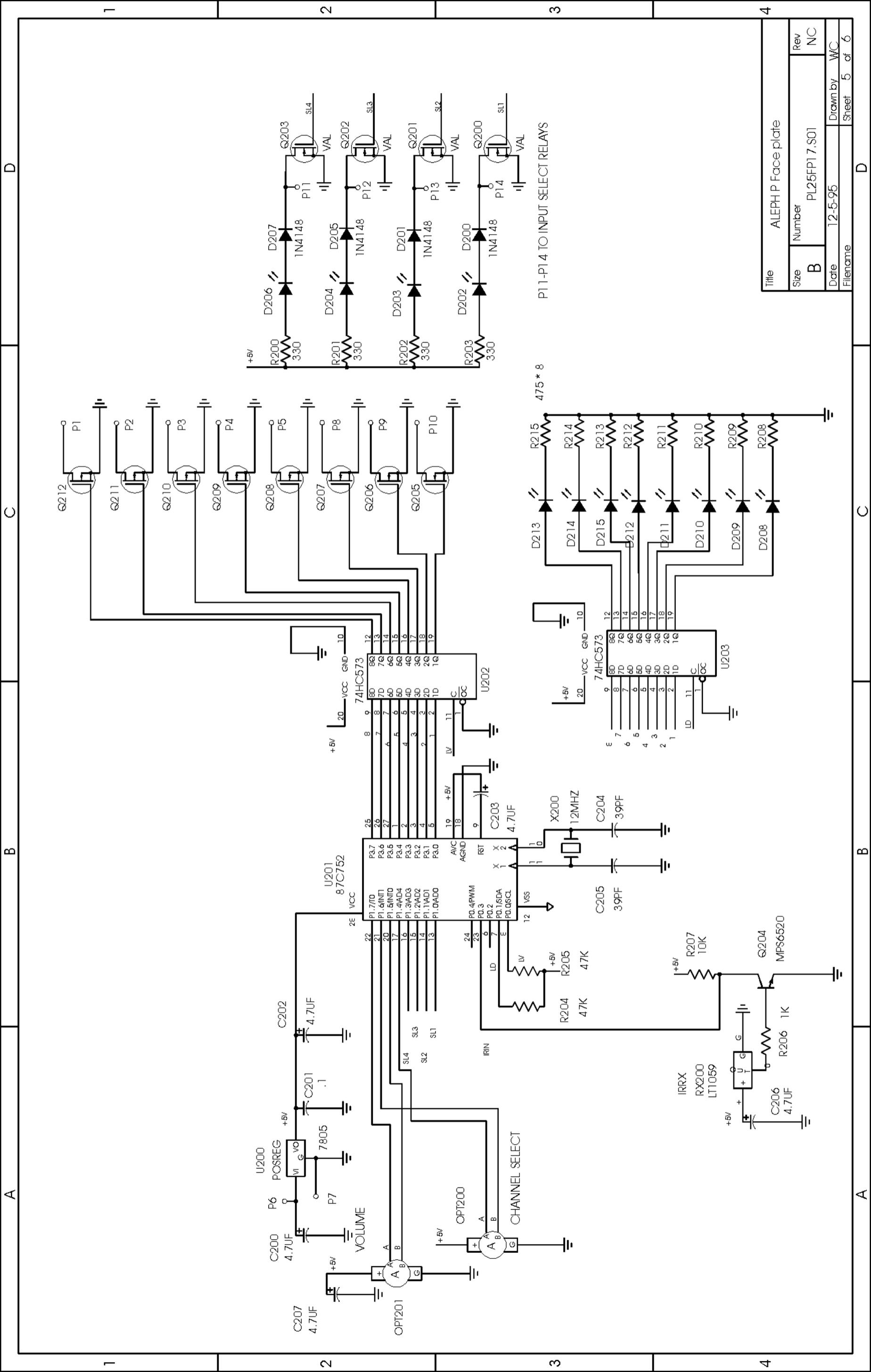
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Size	Number	PL25MB17.S01	
B			
Date	Drawn by		
Filename	Sheet	1	of 6



Title		Aleph P Volume Control	
Size	Number	Rev	
B	PL25VL17		
Date	Drawn by		Sheet 3 of 6
Filename	D		



Title		ALEPH P INPUT SELECT	
Size	Number	PL25CR17	
B			
Date	9/17/95	Drawn by	PASS
Filename		Sheet	4 of 6



Title		ALEPH P Face plate	
Size	Number	Rev	NC
B	PL25FP17.S01		
Date	12-5-95	Drawn by	WJC
Filename		Sheet	5 of 6

1

2

3

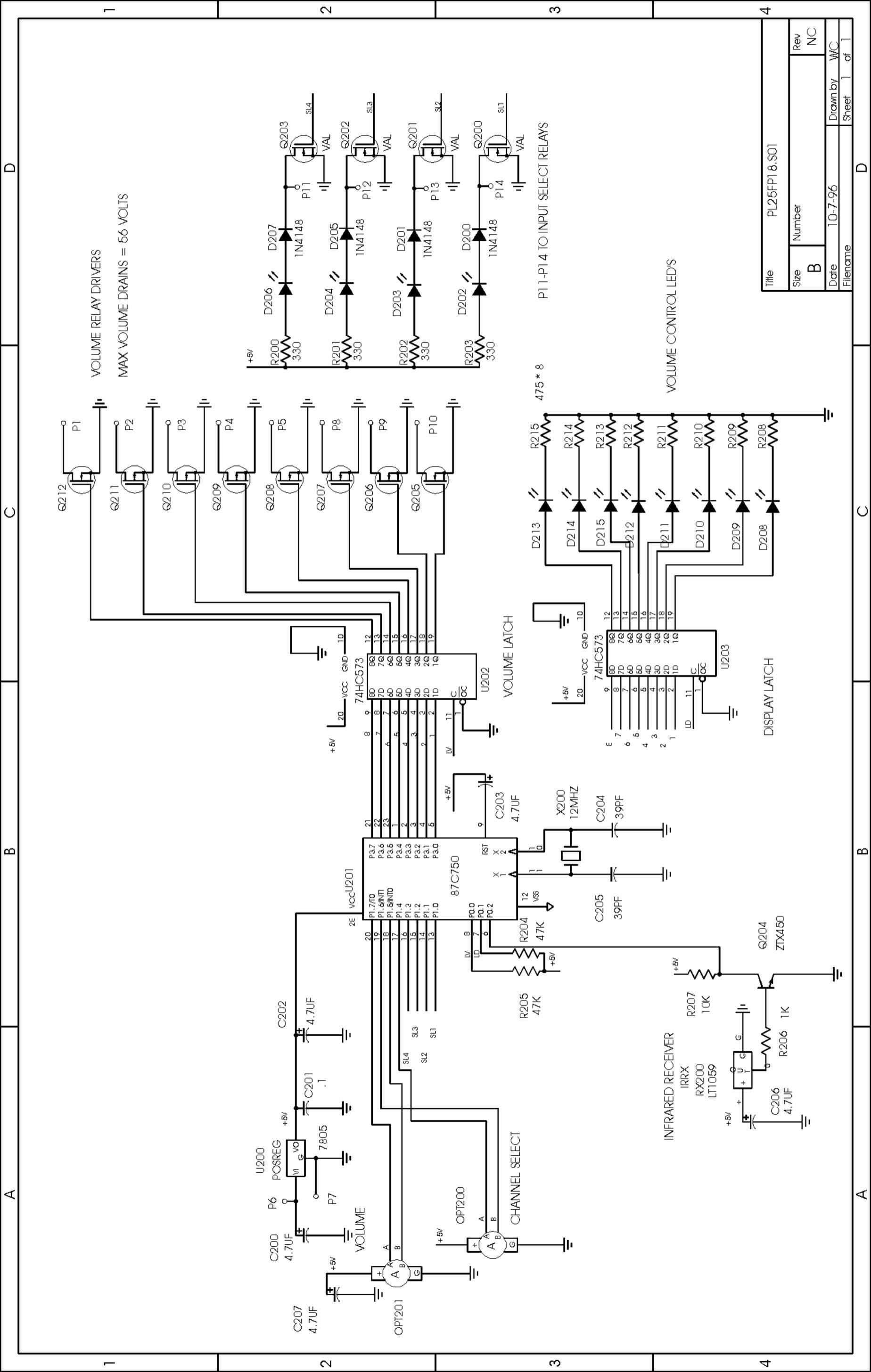
4

A

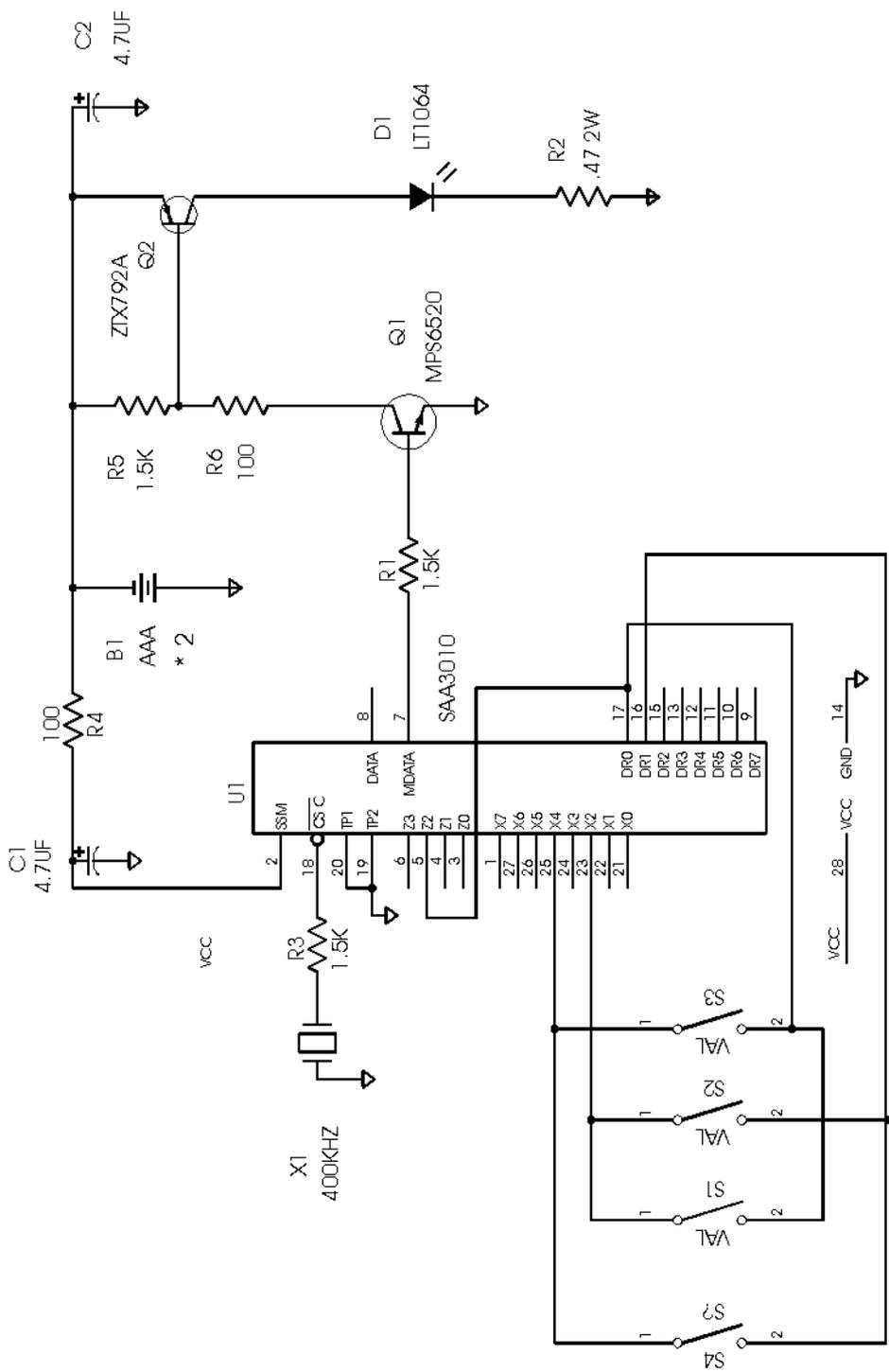
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C

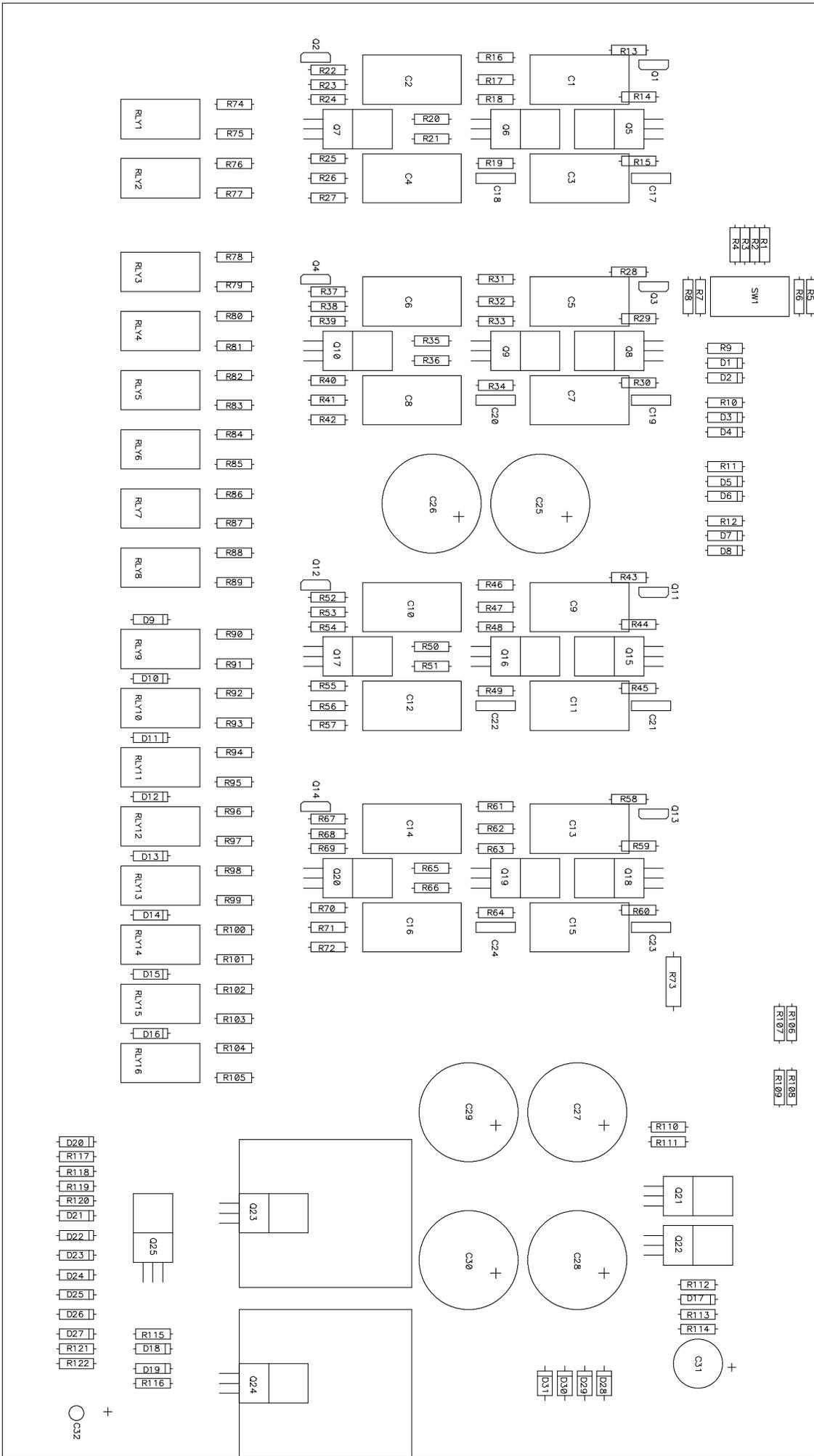
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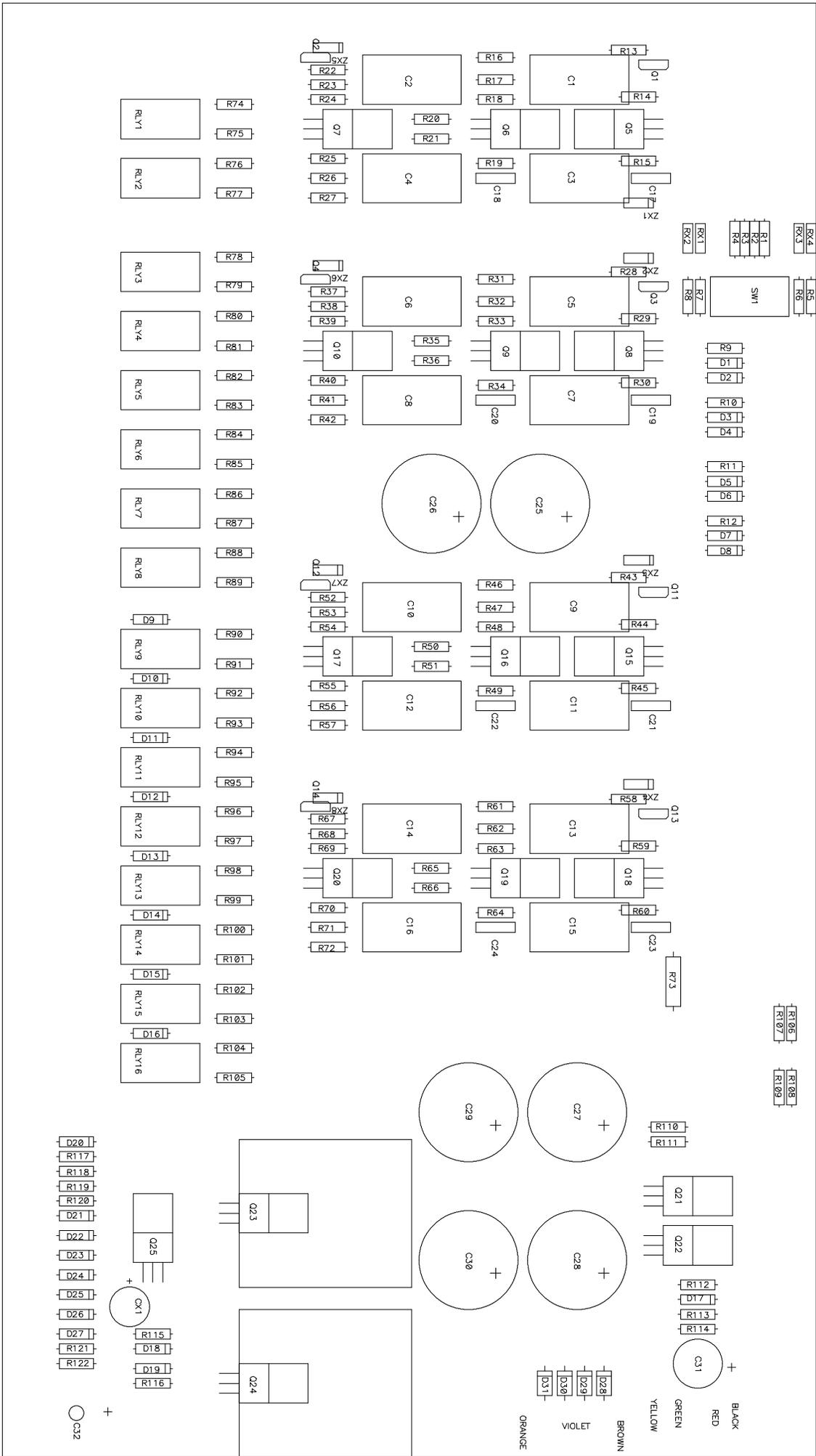


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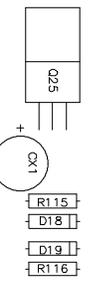


Title		PL25 REMOTE TRANSMITTER	
Size	Number	Rev	NC
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Date		Drawn by	WC
Filename		Sheet	6 of 6

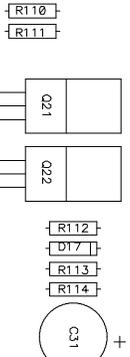




- D20
- R117
- R118
- R119
- R120
- D21
- D22
- D23
- D24
- D25
- D26
- D27
- R121
- R122



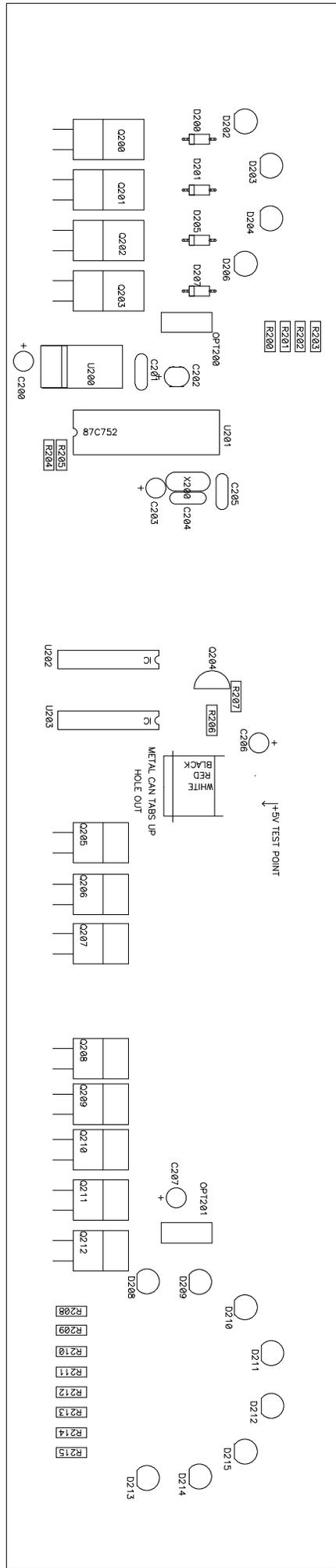
- BLACK
- RED
- GREEN
- YELLOW
- BROWN
- VIOLET
- ORANGE

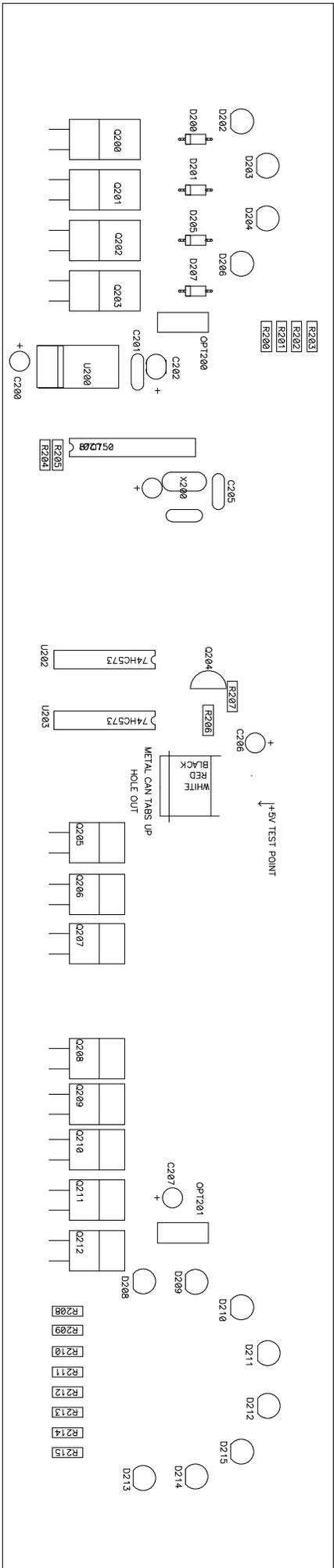


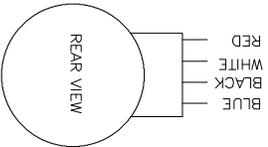
- R106
- R107
- R108
- R109

- R110
- R111

- R112
- D17
- R113
- R114







INPUT

LEFT

RIGHT

LEVEL

