

1.1 Components List

Part	Value	Note
R1	2.2 k Ω	1W
R2	82 Ω	1/4W
R3	220 Ω	1/4W
R4	4.7 k Ω	1/4W
R5-R6-R13-R20-R21	10 k Ω	1/4W
R7	0.47 Ω	5W
R8-R11	27 k Ω	1/4W
R9-R19	2.2 k Ω	1/4W
R10	270 k Ω	1/4W
R12-R18	56k Ω	1/4W
R14 1.5	1.5 k Ω	1/4W
R15-R16	1 k Ω	1/4W
R17	33 Ω	1/4W
R22	3.9 k Ω	1/4W
RV1	100 k Ω	trimmer
P1-P2	10 k Ω	linear potentiometer
C1	3300 μ F/50V	electrolytic
C2-C3	47 μ F/50V	electrolytic
C4	100nF	polyester
C5	200nF	polyester
C6	100pF	ceramic
C7	10 μ F/50V	electrolytic
C8	330pF	ceramic
C9	100pF	ceramic
D1-D2-D3-D4	1N5402-3-4 2A	diode
D5-D6	1N4148	diode
RV1	100 k Ω	trimmer
D7-D8	5.6V	Zener
D9-D10	1N4148	Zener
D11	1N4001	diode 1A
Q1	BC548	NPN transistor or BC547
Q2	2N2219	NPN transistor
Q3	BC557	PNP transistor or BC327
Q4	2N3055	NPN power transistor
U1-U2-U3	TL081	operational amplifier
D12	LED diode	