
Appendix A

Component Parts List

“To estimate the time it takes to do a task, estimate the time you think it should take, multiply by 2, and change the unit of measure to the next highest unit. Thus we allocate 2 days for a one-hour task.”

--- Westheimer’s Rule

ICs

Component	Names	Quantity
16x2 LCD Module	U4	1
78L05 +5V regulator	U7	1
79L05 -5V regulator	U6	1
4066BP bilateral switches	U5	1
LT1054 voltage converter	U8	1
NE555 timer	U11	1
NE5532 dual opamp	U3	1
PIC18F4520 microcontroller	U2	1
TL071 single opamp	U1	1
TL072 dual opamp	U9-10	2

Diodes

Component	Names	Quantity
1N4148	D2-7	6
MUR460	D1	1

Capacitors

Component	Names	Quantity
1 μ F	C15-18, C33	5
4n7	C19-20, C24	3
10nF	C25, C30	2
22pF	C2, C4	2
22 μ F electrolytic	C8, C28	2
47 μ F electrolytic	C3, C6, C9	3
100nF	C5, C7, C22-23, C26-27, C31, C34-35	9
100 μ F electrolytic	C13-14, C29, C32	4
470nF	C10-12	3
1000 μ F electrolytic	C1, C21	2

Transistors

Component	Names	Quantity
2N3904 NPN	Q2, Q4, Q6-8, Q10, Q12	7
2N3906 PNP	Q3, Q5, Q9	3
FQT7N10 mosfet	Q11, Q13	2
IRF840 mosfet	Q1	1

Connectors

Component	Names	Quantity
2-pin 100 th pitch	PL1-6, PL10-13	10
3-pin 100 th pitch	PL7-8	2
5-pin ICSP	PL9	1

Resistors (1%)

Component	Names	Quantity
1k	R8, R19, R25, R37 R57, R62	6
1M	R18, R58, R63-64	4
1R0	R6, R53	2
2M2	R52, R54-55	3
3R3 2W	R2	1
5k1	R15	1
10k multi-turn trimmer	R41	1
10k	R1, R3-5, R7, R9-13, R23, R26, R28, R33-36, R39-40, R42-43, R45, R49-50, R56, R60-61, R67	28
12k	R68	1
20k	R24, R48	2
22k	R27, R31, R44, R46-47, R51, R59, R65	8
27R	R17, R32	2
33k	R14, R20	2
33R	R66	1
100k multi-turn trimmer	R22, R30	2
100k	R16, R21, R29	3
100R	R38	1

Other

Component	Names	Quantity
2-pin jumper	JP1-3	3
Test point	TP1-20	20
20MHz crystal	XTAL1	1

Miscellaneous

Depending on the actual construction, there are some additional components required beyond the LCD display and those on the PCB itself.

For example:

- On-off switch (SPST)
- Speaker and/or headphones (8-64 ohm)
- Headphone socket (recommended)
- IC sockets (optional)
- Electronic control box
- Push-buttons for menu system
- Battery pack (10x NiMH AA)
- Battery charger socket
- External ICSP connector
- Coil connector (5-pin)
- Coil (either commercial or custom made)
- Coil cable (preferably coax, RG58 or equivalent)
- Detector stem, arm cup, stem bolts, etc.
- Damping resistor
- Resonant capacitor for RX loop
- Battery pack charger (see Appendix B)