

P3 (Revision 1.6) Bill of Materials - 1st September 2005

| | | | | | Rapid Electronics | | | Farnell | |
|-------------------|--------|-------------------|---|--|-------------------|------------|-------|----------|------------|
| | No. | Part / Value | Designation | Note | Code | Unit Price | Total | Code | Unit Price |
| Main Board | | | | | | | | | |
| Capacitors | 2 | 33p | C1 C2 | ceramic disc | 08-0050 | 0.05 | 0.10 | 896-421 | 0.03 |
| | 1 | 150p | C4 | ceramic disc | 08-0150 | 0.05 | 0.05 | 896-469 | 0.05 |
| | 7 | 100n | C10 C11 C12 C14 C6 C8 C9 | ceramic disc | 08-0235 | 0.06 | 0.42 | 896-755 | 0.07 |
| | 1 | 10n | C5 | poly | 10-1950 | 0.08 | 0.08 | 301-8866 | 0.09 |
| | 3 | 10uF | C15 C3 C7 | elect. 16v | 11-0825 | 0.05 | 0.15 | 301-6948 | 0.07 |
| | 1 | 1000uF | C13 | elect. 25v | 11-0295 | 0.11 | 0.11 | 320-1612 | 0.41 |
| Resistors | 1 | 10k hor. preset | VR1 | | 67-0230 | 0.10 | 0.10 | 614-683 | 0.17 |
| | 4 | 100R | R10 R11 R12 R13 | | * see note 1 | | | | |
| | 3 | 10K | R18 R25 R26 | | * see note 1 | | | | |
| | 1 (+1) | 10R | R27 (R19 optional) | <i>R19 only for LCD Backlight</i> | * see note 1 | | | | |
| | 4 | 150R | R6 R7 R8 R9 | | * see note 1 | | | | |
| | 6 | 220R | R1 R32 R33 R34 R35 R36 | | * see note 1 | | | | |
| | 4 | 4K7 | R14 R15 R16 R17 | | * see note 1 | | | | |
| | 1 | 510R | R2 | | * see note 1 | | | | |
| Diodes | 1 | 5V6 zener | D1 | | 47-3016 | 0.04 | 0.04 | 368-982 | 0.05 |
| | 1 | 1N4148 | D7 | | 47-3308 | 0.04 | 0.04 | 368-118 | 0.01 |
| | 1 | 1N4001 | D6 | | 47-3130 | 0.04 | 0.04 | 365-117 | 0.04 |
| ICs | 1 | AT89C51ED2 | U1 | supplied with PCB | | | | | |
| | 1 | 12F629 | U19 | supplied with PCB | | | | | |
| | 2 | 62256 | U2 U3 | RS - 435-6997 | n/a | | | 334-5919 | 4.16 |
| | 1 | 74HC573 | U4 | | 83-0152 | 0.45 | 0.45 | 380-829 | 0.59 |
| | 2 | 74HC138 | U5 U8 | | 83-0084 | 0.28 | 0.56 | 380-544 | 0.25 |
| | 1 | DS1210 | U6 | | 82-0516 | 4.70 | 4.70 | 392-728 | 4.47 |
| | 4 | 74HC574 | U7 U10 U11 U15 | | 83-0154 | 0.45 | 1.80 | 380-830 | 0.63 |
| | 1 | 74HC245 | U9 | | 83-0124 | 0.32 | 0.32 | 380-714 | 0.41 |
| | 2 | 74HC241 | U12 U13 | | n/a | | 1.02 | 311-3322 | 0.51 |
| | 1 | ADC0804 | U14 | | 82-0474 | 2.6 | 2.60 | 353-9090 | 2.17 |
| | 1 | 4051B | U16 | | 83-0384 | 0.36 | 0.36 | 385-323 | 0.29 |
| | 1 | 6N137 / 6N139 | U17 | 6N139 = 58-0602 | 58-0640 | 0.65 | 0.65 | 326-770 | 0.63 |
| | 1 | 7805 | U18 | | 47-3290 | 0.32 | 0.32 | 701-853 | 0.31 |
| | 1 | BC547B | Q2 | | 81-0064 | 0.04 | 0.04 | 933-892 | 0.05 |
| | 1 | 74HC04 | U20 | | 83-0042 | 0.22 | 0.22 | 380-362 | 0.29 |
| Misc | 1 | 500ma FUSE | F1 | | 26-4610 | 0.60 | 0.60 | 772-306 | 0.70 |
| | 1 | 3 PIN Header | J1 | | 22-0955 | 0.11 | 0.11 | 143-140 | 0.32 |
| | 2 | 4 PIN Header | J6 J8 | | 22-0960 | 0.13 | 0.26 | 143-141 | 0.41 |
| | 4 | IDC16 Header | J2 J3 J4 J5 | | 19-0510 | 0.29 | 1.16 | 316-7057 | 0.33 |
| | 1 | 24 MHz | XTAL1 | | 90-0384 | 0.32 | 0.32 | 175-617 | 0.88 |
| | 1 | CR2032 | VB | | 18-0490 | 0.65 | 0.65 | 419-9157 | 0.84 |
| | 1 | PCB CELL HOLDER | | | 18-0498 | 0.40 | 0.40 | 676-469 | 1.30 |
| | 1 | TO220 Heatsink | | | 36-0280 | 0.35 | 0.35 | 595-779 | 0.79 |
| | 2 | FERRITE | L1 L2 | | 26-4860 | 0.09 | 0.18 | 323-4861 | 0.06 |
| Switch/LED | | | | | | | | | |
| Diode | 16 | 1N4148 | D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 | | 47-3308 | 0.04 | 0.64 | 368-118 | 0.01 |
| | 16 | TRI-COLOUR LED | D17 D18 D19 D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 | common cathode, 3 pin tri-colour (red/green) | 55-0170 | 0.11 | 1.76 | 637-282 | 0.26 |
| Misc | 1 | IDC16 Header | J1 | | 19-0510 | 0.29 | 0.29 | 316-7057 | 0.33 |
| | 16 | KEYSWITCH | S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 | | * see note 6 | | | | |
| | 16 | LED Spacer | | bag of 25 | 38-0340 | | 2.20 | | |
| Keypad | | | | | | | | | |
| Diode | 9 | 1N4148 | D1 D2 D3 D4 D5 D6 D7 D8 D9 | | 47-3308 | 0.04 | 0.36 | 368-118 | 0.01 |
| Misc | 1 | IDC16 Header | J1 | | 19-0510 | 0.29 | 0.29 | 316-7057 | 0.33 |
| | 9 | KEYSWITCH | S1 S2 S3 S4 S5 S6 S7 S8 S9 | | * see note 6 | | | | |
| Function | | | | | | | | | |
| Diode | 4 | Red LED | D1 D3 D5 D7 | | 55-0102 | 0.07 | 0.28 | 329-9478 | 0.07 |
| | 4 | Green LED | D2 D4 D6 D8 | | 55-0105 | 0.07 | 0.28 | 329-9480 | 0.08 |
| | 2 | 1N4148 | D9 D10 | | 47-3308 | 0.04 | 0.08 | 368-118 | 0.01 |
| Misc | 2 | KEYSWITCH | S1 S2 | multimec tact switch | 78-0655 | 0.75 | 1.50 | 674-825 | 0.95 |
| | 1 | Switch cap - red | for S1 | 10mm circular cap | 78-0675 | 0.16 | 0.16 | 674-850 | 0.22 |
| | 1 | Switch cap - blue | for S2 | 10mm circular cap | 78-0665 | 0.16 | 0.16 | 678-405 | 0.22 |
| | 1 | IDC16 Header | J1 | | 19-0510 | 0.29 | 0.29 | 316-7057 | 0.33 |
| | 1 | 2 PIN Header | J2 | | 22-0950 | 0.07 | 0.07 | 143-139 | 0.27 |
| | 8 | LED Spacer | | bag of 25 | 38-0755 | | 2.20 | | |

| Pot Boards | | * all designations duplicated on upper and lower boards | | | | | | | | |
|--|------------------|---|-----------------------|---|----------------------------|--|--------------|-------|----------------|--|
| | Resistor | 32 | 4k7 or 10k linear | VR1 VR2 VR3 VR4 VR5 VR6 VR7 VR8 VR9 VR10 VR11 VR12 VR13 VR14 VR15 VR16 | | 4k7 = 65-0710 10k = 65-0715 * see note 7 | 0.38 | 12.16 | * see note 9 | |
| | Capacitor | 4 | 100n | C1 C2 | ceramic disc | 08-0235 | 0.06 | 0.24 | 896-755 0.07 | |
| | IC | 4 | 4051 | U1 U2 | | 83-0384 | 0.36 | 1.44 | 385-323 0.29 | |
| | Misc | 2 | IDC16 Header | J1 | | 19-0510 | 0.29 | 0.58 | 316-7057 0.33 | |
| | | 16 | Grey knob | | | 32-0475 | 0.12 | 1.92 | * see note 9 | |
| | | 16 | White knob | | | 32-0470 | 0.12 | 1.92 | * see note 9 | |
| I/O Board | | | | | | | | | | |
| | | 6 | 5 PIN DIN Socket | | | 20-0550 | 0.18 | 1.08 | 809-883 0.47 | |
| | | 1 | IDC16 Header | J1 | | 19-0510 | 0.29 | 0.29 | 316-7057 0.33 | |
| | | 5 | 220R | R1 R2 R3 R4 R5 | | * see note 1 | | | | |
| | | 10 | RFI filter | F1 - F10 | Not essential - see note 8 | 26-6202 | 0.26 | 2.60 | 108-263 0.29 | |
| Other | | | | | | | | | | |
| | | 1 | PLED Module | DELTA OPTO PDC1602M | | * see note 5 | | 20.00 | 414-1921 28.08 | |
| | | 1 | PCB header | | | 22-0545 | 0.17 | 0.17 | 412-9416 0.55 | |
| | | 1 | IDC16 RA Header | | right angled | 19-0560 | 0.34 | 0.34 | 316-6958 0.40 | |
| | | 1 | Power switch | | RS 314-4995 ??? untested | 75-0480 | 0.45 | 0.45 | * see note 10 | |
| | | 1 | Power socket 2.1mm | | | 20-0980 | 0.46 | 0.46 | * see note 10 | |
| | | 1 | PSU | | | 85-2911 | 3.90 | 3.90 | * see note 10 | |
| | | 11 | IDC16 Plug | | | 19-0305 | 0.22 | 2.42 | 316-6879 0.26 | |
| | | 1 | 2 PIN Housing | | F/B Aux Connector | 22-0905 | 0.04 | 0.04 | 143-126 0.12 | |
| | | 1 | 3 PIN Housing | | Power | 22-0910 | 0.05 | 0.05 | 143-127 0.13 | |
| | | 2 | 4 PIN Housing | | Aux & Data/Tempo | 22-0915 | 0.07 | 0.14 | 143-128 0.15 | |
| | | | Crimp terminal | | | * see note 3 | | | | |
| | | 2 | 4k7 or 10k linear pot | VR-Tempo VR-Data | | 4k7 = 65-0710 10k = 65-0715 * see note 7 | 0.38 | 0.76 | * see note 9 | |
| | | 1 | Grey knob | | Tempo knob | 32-0480 | 0.12 | 0.12 | * see note 9 | |
| | | 1 | White knob | | Data knob | 32-0470 | 0.12 | 0.12 | * see note 9 | |
| | | | 16W Ribbon cable | | | * see note 2 | | | | |
| | | 3 | 8 Pin DIP Socket | | | 22-0400 | 0.14 | 0.42 | 424-2348 0.14 | |
| | | 1 | 14 Pin DIP Socket | | | 22-0405 | 0.24 | 0.24 | 424-2350 0.24 | |
| | | 7 | 16 Pin DIP Socket | | | 22-0410 | 0.27 | 1.89 | 424-2361 0.27 | |
| | | 9 | 20 Pin DIP Socket | | | 22-0420 | 0.34 | 3.06 | 424-2385 0.34 | |
| | | 2 | 28 Pin DIP Socket | | | 22-0435 | 0.47 | 0.94 | 424-2427 0.47 | |
| | | 1 | 40 Pin DIP Socket | | | 22-0440 | 0.68 | 0.68 | 424-2440 0.68 | |
| Notes | | | | | | | TOTAL | 91.35 | | |
| I use Rapid for all parts except those they don't carry. Farnell are more expensive, and often have order multiples of 5 or 10, so you'll end up with extra parts. | | | | | | | | | | |
| 1 Rapid only sell resistors in 100s, so it may be cheaper to buy the required quantities from Maplin. | | | | | | | | | | |
| 2 Rapid sell ribbon cable on 30m reels, so this also may be cheaper at Maplin. | | | | | | | | | | |
| 3 Crimp terminals now only available on 500 reels from Rapid - order code 22-1096, £6.90 Maplin sell them in 10s - part no YW25C Farnell housings/headers listed are Molex parts, their crimp terminals are Farnell order code 143-116, £3.81 per 100 | | | | | | | | | | |
| 5 PLED Modules are available with the kit for an extra £20. This may be cheaper than local suppliers. Note that www.crystallfontz.com do these modules in the US for less than I get them in the UK, even in quantity. | | | | | | | | | | |
| 6 Custom engraved Cherry keycaps with switches are now available as an option with the kit. Current price for these is £47 when ordered with PCB/CPU Alternative keyswitches available from Maplin can be used - DM76H / DM77J Or the same Multimec tactswitches used for the step and upper mode switches can be used in all locations Or standard 12mm tact switches can be used FUNC board accepts only Multimec or standard tacts | | | | | | | | | | |
| 7 For all potentiometers, I now use 4k7 parts on ready-built units. These are slightly more resistant to noise, but this is largely irrelevant since an anti-ghosting algorithm was added to the firmware. | | | | | | | | | | |
| 8 RFI filtering is used to ensure ready-built units exceed CE compliance requirements by a significant margin. For kit builders, these are not required, and can be replaced with wire links. | | | | | | | | | | |
| 9 Farnell don't stock Rean knobs of this type. try search on 'multicomp spline knob' for similar parts. Farnell also don't stock the Alpha splined shaft pots, and nothing really similar. If you can't use Rapid you'll need to find them elsewhere, or use a different type of pot. | | | | | | | | | | |
| 10 Any other type of switch and socket may not fit the cutouts in the production enclosure. If you are using your own case, the choice of socket and switch is up to you. | | | | | | | | | | |