

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.										