

Assembly:	P/N 09-0004		Parts List for Controller Board						1 ea. Price in Quantity (US\$)						
Part No.	Component	Package	Value	Temp	Manuf	Manuf Part No / Data Sheet	Distrib	Distrib Part No / Pricing	Qty	1	10	100	1000	5000	
BATT1	9V NiMH Battery, 250 mAh	USER	+9vdc		Tenergy	9v-CARd-250	All Electronics	NMH-925	1	5.250	5.000	5.000	5.000	5.000	
BATT2 (Optional)	+3v Lithium Coin Battery, 45 mAh	USER	+3vdc	-30 to +80 C	Panasonic Battery	BR1225/1VC	Mouser	658-BR1225/1VC	1	1.740	1.74	1.510	1.450	1.450	
BATT2-ALT (Optional)	+3v Lithium Coin Battery, 175 mAh	USER	+3vdc		Panasonic Battery										
BATT1-T	9v Battery Strap -Tstyle, 4 inch vinyl	USER			Keystone Electronics	236	Mouser	534-236	1	0.360	0.720	0.520	0.380	0.330	
BOX1	4.37x 3.25 x 1.52 enclosure, style F, Black, w/ 9V battery slot	BOX1			Bud Industries	PBS-11532-B	Mouser	PBS-PBS-11532-B	1	5.20	3.90	3.38	3.38	3.38	
C1	10 uF solid tantalum, 20V, 10%, ESR = 2.9 ohmsDSC	DSC	10uF	-55 to +85 C	AVX	TAP106K020SRW	Mouser	581-TAP106K020SRW	1	0.51	0.51	0.51	0.425	0.35	
C2	15 uF solid tantalum, 25 v, 20%, ESR = 2 ohms	DSC	15uF	-55 to +85 C	Kemet	T350G156M025AT	Mouser	K0-T350G156M025AT	1	1.67	1.67	1.67	1.46	0.99	
C3	10 uF solid tantalum, 25V	DSC	10uF				All Electronics	DT-1025	1	0.40	0.40	0.30	0.30	0.30	
C4	0.22 uF, MLCC, 50V, Y5V, +80-20%	DSC	10 uF	-30 to +85 C	Xicon	TAP106K020SRW	Mouser	581-TAP106K020SRW	1	0.13	0.13	0.117	0.065	0.058	
C5	22 pF, ceramic, 100v, NPO, 5%	DSC	22pF	-55 to +85 C	Xicon	140-100N5-220J-RC	Mouser	140-100N5-220J-RC	1	0.11	0.11	0.11	0.039	0.024	
C6	22 pF, ceramic, 100v, NPO, 5%	DSC	22pF	-55 to +85 C	Xicon	140-100N5-220J-RC	Mouser	140-100N5-220J-RC	1	0.11	0.11	0.11	0.039	0.024	
C7	470 pF, ceramic, 50V, Y5P, 10%	DSC	470 pF	-25 to +85 C	Xicon	140-50P2-471K-TB-RC	Mouser	140-50P2-471K-TB-RC	1	0.06	0.06	0.06	0.05	0.018	
C8	0.1 uF, ceramic, 50V, Y5U, 20%	DSC	0.1uF	-25 to +85 C	Xicon	140-50U5-104M-RC	Mouser	140-50U5-104M-RC	1	0.22	0.22	0.22	0.096	0.061	
C9	0.1 uF, ceramic, 50V, Y5U, 20%	DSC	0.1uF	-25 to +85 C	Xicon	140-50U5-104M-RC	Mouser	140-50U5-104M-RC	1	0.22	0.22	0.22	0.096	0.061	
CON1	USB-B	USER			FCI	61729-0010BLF	Mouser	649-61729-0010BLF	1	0.580	0.580	0.490	0.390	0.330	
CON2/T1	Pre-wired 2 cond. Connector, 0.1" spacing for Batt1 connection	USER					All Electronics	SBH-2	1	0.200	0.160	0.120	0.120	0.120	
CON2/T2	Pre-wired 2 cond. Connector, 0.1" spacing for SW1 connection	USER					All Electronics	SBH-2	1	0.200	0.160	0.120	0.120	0.120	
D1	Shottky Diode, LDO = 300 mV @ 50 mAmps	DSC	0.3V	-60 to 125 C	Fairchild Semiconductor	1N5817	Mouser	512-1N5817	1	0.250	0.250	0.143	0.070	0.060	
D2	Shottky Diode, LDO = 300 mV @ 50 mAmps	DSC	0.3V	-60 to 125 C	Fairchild Semiconductor	1N5817	Mouser	512-1N5817	1	0.250	0.250	0.143	0.070	0.060	
DIP8	8 pin IC Socket, DIL assembly	DIL	8-pin		FCI	DILB8P-223TLF	Mouser	649-DILB8P-223TLF	1	0.120					
DIP28	28 pin IC Socket, DILB assembly	DILB	28-pin	-40 to 105 C	FCI	DILB28P-223TLF	Mouser	649-DILB28P-223TLF	1	0.210					
J1	06 SIL, Vertical, 2.54mm, Header for ICSP connection	ThruHole	6-pin		Harwin	M20-9770646	Mouser	855-M20-9770646	1	0.170					
J2	05 SIL, VERTICAL, 2.54mm, pin header, tin, for SRF02 connection	ThruHole	5-pin		Molex	22-2-4051	Mouser	538-22-28-4051	1	0.410					
J2 alt	05 SIL, VERTICAL, 2.54mm, Extended (16.80mm) pin header, tin	ThruHole	5-pin		Harwin	M20-9610506	Industrial Electronics	9610506	1				0.340	0.340	
J3	03 SIL, Vertical, 2.54mm, Header for RTC jumpers	ThruHole	3-pin		Harwin	M20-9730345	Mouser	535-M20-9730345	1	0.130	0.13	0.12	0.1	0.09	
J3A	Rectangular connector shunt open top 2-pin for RTC	ThruHole	2-pin		Molex	15-29-1024	Mouser	538-15-29-1024	1	0.240	0.21	0.18	0.153	0.12	
LED_RG	LED, panelmount, 14" leads, Dual LED, Red/Green	DSC	T-1		Dialight	559-3501-007F	Mouser	645-559-3501-007F	1	2.950	2.290	1.830	1.640	1.640	
PTC1	PTC resettable fuse, 0.1A, 60V...NOT USED	DSC	2-pin		Bourns	MF-R010-0-99	Mouser	652-MFR010-LF	1	0.000	0.000	0.000	0.000	0.000	
R10	R 0.125W 5% MCF 10K	R 0.400 TH	10K				All Electronics	291-10K	1	0.050	0.050	0.030	0.010	0.01	
R2	R 0.25W 5% MCF 10K	R 0.500	10K		Xicon	291-10K-RC	Mouser	291-10K-RC	1	0.100	0.040	0.004	0.007	0.006	
R3	R 0.125W 5% MCF 10K	R 0.400 TH	10K				All Electronics	291-10K	1	0.050	0.050	0.030	0.010	0.10	
R	R 0.125W 5% MCF 10K	R 0.400 TH	10K				All Electronics	291-10K	1	0.050	0.050	0.030	0.010	0.10	
R5	R 0.125W 5% MF 4.7K	R 0.400	4.7K		Xicon	291-4.7K-RC	Mouser	291-4.7K-RC	1	0.100	0.040	0.004	0.007	0.006	
R6	R 0.125W 5% MF 4.7K	R 0.400	4.7K		Xicon	291-4.7K-RC	Mouser	291-4.7K-RC	1	0.100	0.040	0.004	0.007	0.006	
R7	R 0.125W 5% MF 4.7K	R 0.400	4.7K		Xicon	291-4.7K-RC	Mouser	291-4.7K-RC	1	0.100	0.040	0.004	0.007	0.006	
R8	R 0.125W 5% MF 4.7K	R 0.400	4.7K		Xicon	291-4.7K-RC	Mouser	291-4.7K-RC	1	0.100	0.040	0.004	0.007	0.006	
R9	R 0.125W 5% MF 4.7K	R 0.400	4.7K		Xicon	291-4.7K-RC	Mouser	291-4.7K-RC	1	0.100	0.040	0.004	0.007	0.006	
R10	R 0.25W 5% MCF 150	R 0.500	150		Xicon	291-150-RC	Mouser	291-150-RC	1	0.100	0.040	0.004	0.007	0.006	
SIL3	SIL Socket PIN LINE COLLET SCKT SOLDER TAIL 3 PINS	0.1" pitch	3-pin		Aries	03-0513-10T	Mouser	535-03-0513-10T	1	0.660					
SPACER	Thru Hole Spacer, 0.25in long				Keystone Electronics	9029			9029	4	0.880	0.880	0.440	0.280	0.260
SW1	Toggle switch SPST OFF-ON panel mount		2-pin				All Electronics	SMTS-4	1	1.350	1.250	1.200	1.200	1.200	
T1_hdr	2-pos small battery header, 2.54mm spacing, for BATT1 connection	ThruHole	2-pin				All Electronics	SBC-2	1	0.200	0.160	0.120	0.120	1.200	
T2_hdr	2-position header, 2.54mm spacing, for SW1 connection	ThruHole	2-pin				All Electronics	SBC-2	1	0.200	0.160	0.120	0.120	1.200	
T3/CON_3P	Pre-wired 3P connector w/header, for LED_RG connection	USER	3-pin				All Electronics	CON243	1	1.000	1.000	1.000	1.000	1.000	
T5/CON_3P	Pre-wired 3P connector w/header, for R11 pot connection	USER	3-pin				All Electronics	CON243	1	1.000	1.000	1.000	1.000	1.000	
U1	PIC18F2550 microcontroller chip	SPDIP	28-pin	-40 to +85 C	Microchip	PIC18F2550-I/P	Microchip	PIC18F2550-I/P	1	4.300	4.300	4.100	3.770	3.580	
U2	DS1337+ Real Time Clock w/ 2 alarms	DIP8	8-pin	-40 to +85 C	MAXIM	DS1337+	Mouser	700-DS1337	1	1.840	1.840	1.690	1.690	1.840	
ULTRA1 alt	SRF02, ultrasonic range finder	Custom	5-pin		Devantech	SRF02	Robot Electronics	SRF02	1	21.693	21.693	20.830	18.380	17.150	
VR1	3.3 volt LDO regulator, 2.0uA ops, 250 mA out, 1.0%, max Vin=13	TO92	3-pin	-40 to +125 C	Microchip	MCP1702T-3302E/TO	Mouser	579-MCP1702-4402E/TO	1	0.52	0.48	0.36	0.36	0.36	
VR1 Alt	3.3 volt LDO regulator, 1.2uA ops, 50 mA out, 2.0%, max Vin=12	TO92B	3-pin		Seiko	817B33AY-G	Mouser	628-817B33AY-G	1	0.51	0.51	0.46	0.35	0.298	
XTAL1	XTAL, 8MHz, 20 ppm, CL=18 pF	DSC	8MHz	-20 to +70 C	Abracon	ABL-8.000MHZ-B2	Mouser	815-ABL-8-82	1	0.390	0.330	0.270	0.154	0.152	
XTAL2	XTAL, 32.768 KHz, 20 ppm, CL=12.5 pF	DSC	32.768 kHz	-40 to +85 C	Abracon	AB26T-32.768KHZ-6-D-7	Mouser	815-AB26T-32.768KHZ	1	0.240	0.140	0.140	0.098	0.091	
XTAL2 alt	XTAL, 32.768 KHz, 20 ppm, CL=6 pF	DSC	32.768 kHz	-20 to +70 C	Citizen	CFS206-32.768KHZB-UB	Mouser	695-CFS206-32.768KHZ-UB	1	0.300	0.260	0.180	0.140	0.120	
PCB_FAB	PCB Board Fabrication				Advanced Circuits		Advanced Circuits			35.500	38.410	5.190	3.060	3.060	
PCB_NRE	Non-recurring Engineering/Tooling for PCB FAB				Advanced Circuits		Advanced Circuits			106.500					
ASSBLY	Assembly of parts on PCB				Advanced Circuits		Advanced Circuits			0.000	46.470	22.840	20.480	20.270	
PCB Artist Bill of Materials is provided for reference only and must be verified by the user.										TOTALS FOR Assembled PCB					
										55	\$ 198.81	\$ 137.36	\$ 76.29	\$ 67.57	\$ 67.54
										Cost of parts only					
											\$ 56.81	\$ 52.48	\$ 48.26	\$ 44.03	\$ 44.21
Assembly:	P/N 09-0005		Parts List for External Assemblies						1 ea. Price in Quantity (US\$)						
Part No.	Component	Package	Value		Manuf	Manuf Part No / Data Sheet	Distrib	Distrib Part No / Pricing	Qty	1-9	10	100	1000	5000	
GROM1	Rubber grommet, ID =41/64 =0.641 in, GD= 0.891 in, Hole=57/64 in				Estco	E-873	Estco	E-873	1						
MAG1/2	Cup magnets, 0.72 inch, 0.16 " ceramic magnet						All Electronics	MAG-121	2	1.800	1.900	1.300	1.200	1.000	
ULTRA1 alt	SRF02, ultrasonic range finder	Custom	5-pin		Devantech	SRF02	Robot Electronics	SRF02	1	21.693	21.693	20.830	18.380	17.150	
BLOCK1	Corner wooden mounting block	Custom							1	10	10	10	10	10	
CHRG1	Dual 9V NiMH Battery Charger				Lenmar Enterprises, INC	PRO9V2	Radio Shack		2300600	1	9.95	9.95	9.95	9.95	
										TOTALS FOR Parts					
										6	\$ 43.44	\$ 43.54	\$ 42.08	\$ 39.53	\$ 38.10
										Total for Parts & Assembly					
											\$ 242.26	\$ 180.91	\$ 118.37	\$ 107.10	\$ 105.64
Assembly:	P/N 09-0006		Parts List for LCD Option						1 ea. Price in Quantity (US\$)						
Part No.	Component	Package	Value		Manuf	Manuf Part No / Data Sheet	Distrib	Distrib Part No / Pricing	Qty	1-9	10	100	1000	5000	
CON2	1x05P vert rect connector female receptacle for SRF02 connection	5-pin			Tyco Electronics	5-534237-3	Mouser	5-534237-3	1	0.910	0.910	0.642	0.531	0.500	
CON3	2x8 Connector receptacle, 16pos, 0.1 pitch vertical dual for LCD	16-pin					All Electronics	DHP-16S	1	1.000	1.000	1.000	1.000	1.000	
CON_J6	2-pos Mini-Latch header & wire housing connector for J6	USER	2-pin	-65 to +125 C	FCI	65039-035LF	Mouser	649-65039-035LF	1	0.370	0.330	0.290	0.290	0.290	
CON_Pins	22-26 AWG female pins for CON_J6	USER	1-pin		FCI	48235-000LF	Mouser	649-48235-000LF	2	0.400	0.380	0.320	0.320	0.320	
J4	2x8 Header, brkway, 0.1 pitch 16pos, str for LCD connection	ThruHole	16-pin		Tyco Electronics	9-146254-0-08	Digi-Key	A34976-08-ND	1	1.150	1.150	0.847	0.575	0.525	
LCD1	LCD 2x8 character, 5vdc, STN-Y/G, no backlight, reflective	ThruHole</													