

[illegible]

8x14x05 shim	9		CIMR8-14-0.5			€0.42			€3.78
8x05 belleville (spring) washer	1		SSRBW8			€1.05			€1.05
M6 nut (1mm thread)	1		LBNR6			€0.32			€0.32
									€0.00
<i>Construction Hardware: Body C'</i>									
M4x45 full thread (thread M4/0.75)	1		ACB4-45			€0.35			€0.35
M4/0.75 nut	1		LBNR4			€0.28			€0.28
M3x22	7		CB3-22			€0.10			€0.70
8x22x7 bearing	2		B608ZZ			€1.80			€3.60
3x35 dowel pin	4		MS3-35			€0.20			€0.80
M3x35	3		CB3-35			€0.12			€0.36
8x14x05 shim	6		CIMR8-14-0.5			€0.42			€2.52
									€0.00
<i>Construction Hardware: Cabling</i>									
Wire rope (more threads preferable)	10			603.000.540		€0.89	0.54mm 7x7 A4-AISI 316 Stainless Steel Cable MBL 16kgs - 603.000.540		€8.92
Double ferrule (for crimping onto wire rope)	20			115.000.700		€0.24	Code 0.7 Double Copper Ferrule		€4.78
Turnbuckle (spanschloss)	1				Hobbykellershop.eu: 018-3051	€6.19	Spanschloss M2.5 - High Precision		€6.19
									€0.00
<i>Required Tools for Mechanics Workbench</i>									
Arbor Press	1				Schuchardt Maskin smaskin.se	€92.06	Verkstadspress (1 tonne recommended)	Chose a larger next time	€92.06
Wire rope cutter	1			100.004.062		€9.95	Budget Wire Rope Cutter up to 3mm Diameter - 100.004.062	Chose a better and more expensive	€9.95
Wire rope ferrule crimper (you really need this)	1			115.007.023		€51.43	TECNI@Cable Crimp Tool for Double Copper Ferrules - 115.007.023		€51.43
Torch	1				Teknikmagasinet.se 340927	€24.34			€24.34
Torch gas	1				Teknikmagasinet.se 340927	€3.17			€3.17
Hex keys	1				Local	€8.00			€8.00
Adjustable wrench	1				Local	€8.00			€8.00
									€0.00
<i>Other</i>									
Rubber feet (from a computer case; SilverStone Milo ML05B Black)	4					€1.00			€4.00
									€0.00
ELECTRONICS									
									€0.00
<i>Electronics Box</i>									
WoodenHaptics Motherboard (see below)	1								€0.00
WoodenHaptics DAQ Extension board (see below) /or/	1								€0.00
ALT mbed.org LPC1768 (OM11043) M3 extension board (for USB experime	0	1761179				€51.61	NXP OM11043 LPC1768, MBED PROTOTYPING BOARD, KIT	The chip alone is only 90kr	€0.00
Maxon 50/5 driver module (could eventually be custom made)	3	438725				€148.64	ESCON Module 50/5, 4-Q Servocontroller for DC/EC motors, 5/15 A, 10 - 50 VDC		€445.92
									€0.00
<i>Power Supply</i>									
48V power supply, at least 5A (should probably be 9A)	1				Elfa.se 69-655-94	€148.57	Nätaggregat med fast utspänning 43...58 VDC CH -, DE -, EA-PS548-05R	Should be replaced	€148.57
									€0.00
<i>Motors & Encoders</i>									
Maxon 40mm (148877) & 500 CPR Encoder (110514) combination	3	200116				€473.59			€1,420.78
ALT Maxon 30mm	0	310009							€0.00
ALT Maxon 25mm	0	118755							
<i>Electric Cables</i>									
12mm sleeves (5m)	1	1297228				€3.03	PRO POWER, SLEEVEING, BRAID, 12MM, BLACK, 5M, PRO POWER-PETBK12BG5-SLEEVEING, BRAID, 12MM, BLACK, 5M		€3.03
Male 10 pin cable head (for extending enc.cables)	3		41011859			€1.66	IDC hane kabel 10-pol 2.54mm		€4.98
Female 10 pin cable head (for extending enc. cables)	3		41000574			€0.37	IDC hona kabel 10-pol guld 2.54mm		€1.10
10 pin flat cable, per meter (for extending enc. cables)	5		31670207			€0.63	Flatkabel grå 10 ledare 1.27mm /m		€3.14
									€0.00
<i>PC Connection</i>									
Sensoray S826	1				www.enciris.com	€793.73	http://www.sensoray.com/products/826.htm	Order directly or through distributor	€793.73
DAQ Cable 26-pin	1	2217642				€4.14	AMPHENOL FC26600-0 LEAD, 2.54MM, F/F, 600MM, 26WAY		€4.14
DAQ Cable 50-pin	1	2217690				€7.02	AMPHENOL FC50600-0 LEAD, 2.54MM, F/F, 600MM, 50WAY		€7.02
									€0.00
									€0.00
ELECTRONICS CIRCUIT BOARDS									
									€0.00
<i>WoodenHaptics Motherboard</i>									
PCB manufacturing (price based on order of 2 units)	1				pcb-pool.com	€69.00			€69.00
motor & high pwr connectors	4	1761541				€0.31	IMO PRECISION CONTROLS 20.155MH/2 HEADER, 3.5MM, HORIZ, 2WAY		€1.23
ALT vertical connectors (4)	0	1761550				€0.31	IMO PRECISION CONTROLS 20.155MV/2 HEADER, 3.5MM, 2WAY		€0.00
cable block high pwr	4	1761532				€0.84	IMO PRECISION CONTROLS 20.1550M/2 TERMINAL BLOCK, 3.5MM, 2WAY		€3.34
10 pin encoder connector	3	2215290				€0.90	MULTICOMP MC9A22-1034 HEADER, THT, RIGHT ANGLE, 2.54MM, 10WAY		€2.69
ALT 10 pin STRAIGHT encoder header (3x)	0	2215304				€0.49	61201021621 HEADER, THT, VERTICAL, 2.54MM, 10WAY		€0.00
micro usb connector, smd (non-reversed)	1	1645325				€1.48	HIROSE(HRS) ZX62-B-5PA(11) MICRO USB, B TYPE, RECEPTACLE		€1.48

20 pin socket (to ext. board)	2	1593469				€1.76	MULTICOMP 2212S-20SG-85 SOCKET, PCB, 1 ROW, 20WAY		€3.51
4 pin socket (to ext. board)	1	1593460				€0.39	MULTICOMP 2212S-04SG-85 SOCKET, PCB, 1 ROW, 4WAY		€0.39
18 pin (2x9) escon socket	3	1668305				€3.66	SAMTEC SSQ-109-01-G-D RECEPTACLE, 2.54MM, DUAL, 18WAY		€10.97
12 pin escon socket (1 pin discarded)	3	1593465				€0.16	MULTICOMP 2212S-12SG-85 SOCKET, PCB, 1 ROW, 12WAY		€0.48
Encoder driver	3	1103045				€1.02	TEXAS INSTRUMENTS AM26LS32ACD IC, DIFF LINE RECEIVER QUAD, 26LS32		€3.06
									€0.00
<i>WoodenHaptics DAQ Extension Board</i>									
PCB manufacturing (price based on order of 6 units)	1				pcb-pool.com	€15.70			€15.70
50 pin daq connector	1	2215272				€1.93	AMPHENOL T816150A1S102CEU HEADER, L/LATCH, STR, 2.54MM, 50WAY	Should be replaced with low profile	€1.93
26 pin daq connector	1	2217535				€1.71	AMPHENOL T816126A1S102CEU HEADER, L/LATCH, STR, 2.54MM, 26WAY	Should be replaced with low profile	€1.71
44 pins (50) ext. board	1	3418388				€2.76	TE CONNECTIVITY / AMP 5-826629-0 HEADER, 1ROW, 50WAY		€2.76
									€0.00
<i>Box Enclosure Mounting</i>									
Distance screws	4	1466725				€0.30	ETTINGER SPACER, M3X, 5-VZK ETTINGER-05.13.051-SPACER, M3X, 5-VZK		€1.21
M3x6 screws (preferably M3x4 screws that comes with computers)	4	1419986				€0.02	DURATOOL-M36 PRSTMCZ100--SCREW, STEEL, BZP, 6MM, M3, PK100		€0.09
M3 washers	4	1377536				€0.01	DURATOOL M3 BRASS FULL WASHER WASHER, FULL, BRASS, M3		€0.04
									€0.00
<i>Recommended Equipment for Electronics Workbench</i>									
Proper soldering station	0	1447700				€375.13	WELLER WD 1000T (EU) SOLDERING STATION, 80W, 50DEG-450DEG, EU		€0.00
Proper oscilloscope (not really needed, for testing only)	0	2191868				€823.17	TEKTRONIX DPO2002B OSCILLOSCOPE, 2CH, 70MHZ, 1GSPS		€0.00
Solder cleaner	0	1792731				€4.86	WELLER CLEANER, WOOL, BRASS, WDC, PK2 WELLER-T0051384099-CLEANER, WOOL, BRASS, WDC, PK2		€0.00
Solder activator	0	873895				€8.76	WELLER TIP ACTIVATOR, LOW TEMP, 25G WELLER-TIP ACTIVATOR-TIP ACTIVATOR, LOW TEMP, 25G		€0.00
Solder 1.2 mm tip	0	1282099				€4.86	WELLER TIP, SOLDERING IRON, ROUND, BENT, 1.2MM WELLER-LTF-TIP, SOLDERING IRON, ROUND, BENT, 1.2MM		€0.00
Solder 0.5 mm tip	0	1282096				€4.97	WELLER TIP, SOLDERING IRON, ROUND, 0.5MM WELLER-LT1SA-TIP, SOLDERING IRON, ROUND, 0.5MM		€0.00
Organizer cabinet (Sortimentskåp)	0	1367091				€21.67	RAACO CABINET, ORGANISER, 44COMPARTMENT		€0.00
De-soldering	0								€0.00
Tweezers	0	1617218				€81.80	DURATOOL-D00840-TWEEZERS SET, ESD SAFE, 6PC		€0.00
Hack-cables	0								€0.00
Thin lead	0								€0.00
Thicker lead	0								€0.00
Scalpel	0								€0.00
Precision cutter	0								€0.00
Electrostatic mat kit with wristband and earth connector	0	1736631				€110.69	MULTICOMP 069-0007 ESD WORKSTATION KIT, BLACK 0.7X1M		€0.00
Heat gun	0	2473569				€126.24	STEINEL HL 2020 E EURO		
Heat gun accessory for (reflector) for crimp tubes	0	3116797				€15.34	STEINEL-070519-NOZZLE, REFLECTOR, SMALL		
	0								€0.00
									€0.00
COMPUTER (OPTIONAL)									
ITX Motherboard AM1 (MSI AM11)	0				Komplett.se 811857	€25.29	MSI AM11, Socket-AM1 mini-ITX, DDR3, 1x-PCIe-x16, GbLAN, USB3.0, VGA, DVI, HDMI		€0.00
CPU (AMD Athlon 5350 APU)	0				Komplett.se 809078	€46.48	AMD Athlon 5350 Socket-AM1, Quad Core, 2.05GHz, 2MB, 25W, 28nm, Radeon R3-series, Boxed w/fan		€0.00
PSU Small form factor	0				Komplett.se 802785	€39.37	Silverstone ST30SF 300W PSU SFX, 80 Plus Bronze, Standard, 1x 6pin PCIe, 3x SATA, 2x Molex, 1x FD		€0.00
Wireless keyboard/trackpad combo	0				Komplett.se 645476	€24.55	Logitech Wireless Touch Keyboard K400		€0.00
Case SilverStone Milo ML05B Black	0				inet.se	€63.39	SilverStone Milo ML05B Svart		€0.00
PCIe flexible riser	0				inet.se	€10.48	ASRock BTCPro Kit (PCIe riser)		€0.00