

# MIDI Ultimate Synthesiser parts list

Qty Description Value Designator

## Resistors

2	1% 0.25W	10R	R523, R524
4	1% 0.25W	100R	R911, R913, R916, R917
3	1% 0.25W	200R	R21, R611, R622
5	1% 0.25W	220R	R420, R902, R903, R904, R908
1	1% 0.25W	360R	R905
2	1% 0.25W	470R	R407, R518
3	1% 0.25W	475R	R108, R208, R308
16	1% 0.25W	1k	R3, R30, R114, R214, R314, R419, R421, R610, R621, R717, R719, R720, R817, R819, R820, R901
2	1% 0.25W	1k8	R511, R907
3	Tempco	2k +3500ppm	R103, R203, R303
10	1% 0.25W	2k	R123, R223, R323, R402, R406, R503, R514, R528, R716, R816
10	1% 0.25W	3k	R12, R25, R31, R37, R43, R132, R232, R332, R603, R614
7	1% 0.25W	3k3	R137, R237, R337, R602, R609, R613, R620
12	1% 0.25W	4k7	R38, R102, R135, R202, R235, R302, R335, R422, R423, R501, R601, R612
1	1% 0.25W	7k5	R24
3	1% 0.25W	9k1	R138, R238, R338
36	1% 0.25W	10k	R2, R104, R113, R115, R120, R128, R204, R213, R215, R220, R228, R304, R313, R315, R320, R328, R408, R521, R522, R703, R704, R709, R712, R714, R715, R718, R803, R804, R809, R812, R814, R815, R818, R906, R914, R920
2	0.1% 0.4W	10k	R912, R919
1	1% 0.25W	13k	R909
1	1% 0.25W	15k	R531
2	0.1% 0.4W	15k	R910, R915
3	1% 0.25W	18k	R129, R229, R329
25	1% 0.25W	20k	R14, R22, R23, R35, R42, R133, R136, R140, R233, R236, R240, R333, R336, R340, R413, R520, R526, R529, R530, R701, R707, R710, R801, R807, R810
3	1% 0.25W	30k	R412, R414, R426
3	1% 0.25W	39k	R415, R416, R513
10	1% 0.25W	47k	R131, R141, R231, R241, R331, R341, R424, R425, R713, R813
3	1% 0.25W	49k9	R105, R205, R305
1	1% 0.25W	56k	R403
1	1% 0.25W	68k	R525
1	1% 0.25W	82k	R502
67	1% 0.25W	100k	R4, R15, R16, R20, R26, R28, R34, R39, R40, R101, R107, R112, R117, R118, R119, R122, R124, R125, R126, R127, R130, R201, R207, R212, R217, R218, R219, R222, R224, R225, R226, R227, R230, R301, R307, R312, R317, R318, R319, R322, R324, R325, R326, R327, R330, R401, R404, R405, R410, R411, R417, R505, R506, R508, R509, R515, R605, R608, R616, R619, R705, R706, R711, R805, R806, R811, R918
3	1% 0.25W	110k	R134, R234, R334
2	1% 0.25W	120k	R418, R527

2	1% 0.25W	130k	R606, R617
5	1% 0.25W	150k	R19, R29, R409, R512, R517
1	1% 0.25W	180k	R504
15	1% 0.25W	200k	R5, R6, R7, R8, R9, R10, R11, R27, R33, R106, R116, R206, R216, R306, R316
2	1% 0.25W	270k	R604, R615
1	1% 0.25W	300k	R32
6	1% 0.25W	470k	R1, R17, R18, R507, R510, R519
2	1% 0.25W	680k	R36, R41
21	1% 0.25W	1M	R13, R109, R110, R111, R121, R139, R209, R210, R211, R221, R239, R309, R310, R311, R321, R339, R516, R702, R708, R802, R808
2	1% 0.25W	3M	R607, R618

## Potentiometers

1	Pot RV09	10k	VR404
1	Pot RV09	20k	VR505
29	Pot RV09	100k	VR11, VR101, VR102, VR103, VR104, VR105, VR201, VR202, VR203, VR204, VR205, VR301, VR302, VR303, VR304, VR305, VR401, VR402, VR403, VR501, VR502, VR503, VR506, VR507, VR601, VR602, VR703, VR803, VR901
3	Pot RV090	1M	VR9, VR10, VR12
9	Pot RV09	100k Log	VR1, VR2, VR3, VR4, VR5, VR6, VR7, VR8, VR504
6	Pot RV09	1M Log	VR701, VR702, VR704, VR801, VR802, VR804

## Preset potentiometers

4	Preset 25T	100R	P102, P202, P302, P401
2	Preset 25T	2k	P502, P901
1	Preset 25T	20k	P1
4	Preset 25T	100k	P101, P201, P301, P501

## Capacitors (M-Ceramic = multilayer ceramic)

3	Ceramic disc	4p7	C109, C209, C309
5	M-Ceramic	10p	C115, C215, C315, C601, C607
3	M-Ceramic	22p	C16, C909, C910
1	M-Ceramic	47p	C6
14	M-Ceramic	100p	C101, C102, C110, C201, C202, C210, C301, C302, C310, C503, C703, C707, C803, C807
2	M-Ceramic	330p	C407, C408
2	Ceramic disc	560p	C522, C523
10	M-Ceramic	1n	C11, C104, C204, C304, C705, C709, C805, C809, C912, C913
3	Polystyrene	5n	C0105, C205, C305
1	Polystyrene	10n	C15
6	M-Ceramic	10n	C401, C501, C702, C710, C802, C810
3	M-Ceramic	22n	C13, C602, C608
2	M-Ceramic	47n	C508, C509
69	M-Ceramic	100n	C1, C3, C4, C5, C7, C8, C10, C12, C14, C18, C19, C20, C21, C23, C103, C106, C107, C108, C112, C114, C203, C206, C2007, C208, C212, C214, C303, C306, C307, C308, C312, C314, C403, C404, C406, C502, C505, C506, C524, C525, C527, C529, C604, C605, C610, C611, C701, C704, C706, C708, C712, C713,

Qty	Description	Value	Designator	Qty	Description	Value	Designator	
			C714, C716, C801, C804, C806, C808, C812, C813, C814, C816, C901, C904, C905, C907, C908, C911, C914	1	Opto-Isolator	6N139N	U902	
				2	Voltage Regulator	78L05	U505, U903	
1	M-Ceramic	220n	C504	1	Pre-Programmed Ultimate CPU	ATMEGA328P-PU	U905	
4	M-Ceramic	1u	C516, C518, C519, C526	4	JFET Quad Op-Amp	LF444CN	U4, U101, U201, U301	
2	Electrolytic	1u 63V	C512, C513	2	Dual Transcond	LM13700	U402, U501	
4	Tantalum	1u 35V	C520, C521, C715, C815	2	1W Audio Amplifier	LM386N-4	U503, U504	
1	Electrolytic	2.2u 50V nPol	C17	1	DAC	MCP4922	U907	
6	Electrolytic	10u 25V	C2, C9, C514, C515, C609, C612	1	Dual JFET Op-Amp	OP275	U906	
1	Electrolytic	10u 50V nPol	C22	1	Echo Delay Processor	PT2399	U506	
2	Tantalum	15u 25V	C718, C818	3	Op-Amp	TL071CN	U2, U3, U5	
1	Electrolytic	47u 25V	C528	13	Dual-Op-Amp	TL072	U1, U102, U103, U202, U203, U302, U303, U401, U502, U601, U602, U702, U802	
16	Electrolytic	100u 25V	C111, C113, C211, C213, C311, C313, C402, C405, C507, C517, C603, C606, C711, C717, C811, C817					
5	Electrolytic	220u 25V	C510, C511, C902, C903, C906	2	Quad Op-Amp	TL074	U704, U804	
				1	Voltage Reference	TL431CLP	U904	
<b>Switches</b>				<b>Miscellaneous</b>				
2	DPDT	Toggle	S601, S604	20	8-pin Turned IC Socket			
7	SPDT	Toggle	S1, S602, S605, S703, S705, S803, S805	15	14-Pin Turned Pin IC Socket			
32	SPDT CO	Toggle	S101, S102, S103, S104, S105, S106, S201, S202, S203, S204, S205, S206, S301, S302, S303, S304, S305, S306, S401, S402, S403, S404, S501, S502, S503, S603, S606, S701, S702, S801, S802, S902	3	16-Pin Turned Pin IC Socket			
2	SPST	Push Button	S704, S804	1	28-Pin Turned Pin IC Socket			
1	Rotary	Hex Switch	Lorlin BCK1002	1	Crystal 16MHz	Xtal901		
			S903	1	PCB	Main MIDI Ultimate board		
				1	Standoff Fixings kit, Pk of 15, 10mm Long, 4.1mm ID Panel Fixing			
<b>Connectors</b>				<b>Component designations relate to each module on the main PCB to aid locating them when assembling the PCB.</b>				
2	JST XH Lead Assembly, 5-Way		J901, J904	<b>Designator No.</b>	<b>Module</b>			
1	JST XH Lead Assembly, 10-Way		J902	<100	White Noise, Mixer, S&H, Repeat Gate			
1	Power socket CTB9308/3J903			1xx	VCO 1			
1	Power plug			2xx	VCO 2			
				3xx	VCO 3			
				4xx	VCF			
				5xx	VCA, Headphones Amplifier, Echo			
				6xx	LFO 1, LFO 2			
				7xx	ADSR 1			
				8xx	ADSR 2			
				9xx	MIDI			
<b>Diodes</b>				<b>Kits of parts associated with each monthly issue are available from soundtronics.co.uk – approximate cost of parts for the complete MIDI Ultimate synth is:</b>				
28	1N914		D1, D2, D5, D101, D102, D201, D202, D301, D302, D601, D603, D604, D606, D701, D702, D703, D704, D705, D706, D707, D801, D802, D803, D804, D805, D806, D807, D901	Main PCB components including pots and switches				£195
				Power Supply components including housing and heatsinks				£20
				UK plug top 12VAC 500mA power supply				£9
				PCB set consisting of main PCB, jack sockets PCB and MIDI sockets PCB				£76
				Power Supply PCB				£8
				Switchcraft jack sockets. MIDI sockets				£25
				Laser Engraved front panel				£58
				CNC-routed aluminium back panel				£45
				Optional laser-cut acrylic back panel, only required if not using the aluminium back panel				£11
				Knobs (the style of knobs is a personal preference) – from				£40
				Optional hardwood case				£72
<b>LEDs</b>								
2	Green	LED	D3, D4					
2	Yellow	LED	D602, D605					
1	Blue	LED	D902					
<b>Transistors</b>								
4	BJT	2N3904	Q1, Q601, Q602, Q901					
3	BJT Matched Pair	2N3904	(Q101, Q102), (Q201, Q202), (Q301, Q302)					
2	BJT	2N3906	Q501, Q502					
1	BJT Matched Pair	2N3906	(Q401, Q402)					
5	JFET	MPF102	Q103, Q203, Q303, Q403, Q404					
3	JFET	PN4391	Q2, Q3, Q4					
<b>ICs</b>								
2	Logic Chip	4001B	U701, U801					
4	Logic Chip	40106B	U703, U803, U901, U908					
2	Logic Chip	4066B	U705, U805					