



**synthesis
technology**

**MOTM-300 Voltage-Controlled Oscillator
Assembly Instructions & Owner's Manual**

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July 25, 1999

MOTM-300 PARTS LIST

Please carefully check that all parts are in your kit. If you have a suspected shortage, please call or email. If you get free extra stuff, keep it for next time.

Capacitor bag, containing the following 26 parts:

3ea 10mfd, 25V or 50V Electrolytic	C5, C16, C17
6ea 100pf (marked 101) ceramic axial	C4, C9, C14, C23, C24, C26
1ea 220pf (marked 221) ceramic axial	C3
2ea 22pf (marked 220) ceramic axial	C2, C13
1ea 4700pf axial polystyrene	C15
13ea 0.1mfd (marked 104) ceramic axial	C1, C6-8, C10-12, C18-22, C25

5% Resistor bag, containing the following 40 parts:

7ea 10K (brown, black, orange)	R2, R5, R10, R20, R21, R33, R60
6ea 1K (brown, black, red)	R9, R24, R31, R34, R44, R54
4ea 47K (yellow, violet, orange)	R12, R15, R40, R46
3ea 4K7 (yellow, violet, red)	R25, R41, R100 (R100 off-board!)
3ea 100K (brown, black, yellow)	R1, R13, R22
2ea 43K (yellow, orange, orange)	R51, R53
2ea 2M2 (red, red, green)	R39, R50
2ea 1M (brown, black, green)	R6, R35
2ea 1K5 (brown, green, red)	R7, R32
1ea 3K9 (orange, white, red)	R8
1ea 470K (yellow, violet, yellow)	R11
1ea 330K (orange, orange, yellow)	R14
1ea 75K (violet, green, orange)	R16
1ea 300 Ω (orange, black, brown)	R23
1ea 22 Ω (red, red, black)	R28
1ea 62K (blue, red, orange)	R43
1ea 22K (red, red, orange)	R49
1ea 220K (red, red, yellow)	R52

Precision Resistor bag, containing the following 19 parts:

4ea 1K50 1% (brown, green, black, brown)	R26, R27, R29, R36
3ea 100K 1% (brown, black, black, orange)	R18, R57, R58
2ea 51K1 1% (green, brown, brown, red)	R47, R48
1ea 100K 0.1% (marked 1003B)	R45
1ea 3M32 1% (marked with value)	R3
1ea 1M 1% (marked with 1004F)	R37
1ea 150K 0.1% (marked 1503B)	R4
1ea 69K8 1% (marked 6982F)	R55
1ea 44K2 1% (marked 4422F)	R56

1ea 10K 1% (brown, black, black, red)	R19
1ea 301K 1% (orange, black, brown, orange)	R17
1ea 475K 1% (yellow, violet, green, orange)	R38
1ea 1K 1% 3W Tempco	R42

IC bag, containing the following 21 parts:

3ea 2N3904 NPN TO-92 transistor	Q3, Q5, Q7
2ea 2N4403 PNP TO-92 transistor	Q4, Q6
1ea LM319 comparator	U3
1ea TL074A quad op amp	U2
1ea MXL1013 (or LT1013) dual op amp	U4
2ea OP275GP dual op amp	U5, U7
1ea LM78L05 TO-92 voltage regulator	U6
1ea CA3080AE OTA	U8
1ea 10K 16-pin resistor pack	U1
6ea 1N4148 diodes (NOT in the black foam!)	D1-D6
1ea MAT-02EH dual NPN	Q1
1ea LS3954A dual JFET	Q2

Misc #1 bag, containing the following 9 parts:

3ea Axial ferrite beads (plain, gray things)	L1, L2, L3
1ea MTA-156 power connector	JP1
3ea SPDT (ON-ON) toggle switch	S1, S2, S3
1ea trimmer, 25-turn 20K Bourns 3296Y	R59
1ea trimmer, 1-turn 100K Bourns 3386	R30

Knobs, 6ea, ALCO PKES90B1/4

Jacks, 9ea Switchcraft 112A

Pots, 6ea containing the following:

5ea 100K cermet Spectrol 149	VR1- VR5 (one has a lockwasher)
1ea 100K conductive plastic Bourns 95A1	VR6

Front panel

Mounting bracket

Wire bag, containing the following 15 wires:

4ea RG-174 coax, 4 ½ inches
1ea RG-174 coax, 7 inches
4ea 3-wire set 22ga, 4 ½ inches (white/orange/gray)
2ea 2-wire set, 22ga, 7 inches (white/orange)
3ea 2-wire set, 22ga, 3 ½ inches (red/black)
1ea Power Cable, 20"

Hardware bag, containing:

4ea #8-32 x 3/8 black screws (for mounting module to rack)
4ea #6-32 x 1/2 zinc screws (for attaching pc board to bracket)
4ea 1/4 inch aluminum spacers
6ea #6 KEPS nuts (2 for attaching bracket to front panel, 4 for pc board)
8ea small tie-wraps
3ea small heat-shrink tubing

Organic Solder

No-clean Solder

PC Board, MOTM-300