

Bill of Materials - MNATS Revision A

Revision 1 and 2 - Revision 1.4

Mouser Cart Link: <http://www.mouser.com/ProjectManager/ProjectDetail.aspx?AccessID=4f9b0f96c4>

Designation	QTY	value	Description	Manufacturer	Part Number	Notes/Alternates
Non PCB Components						
	1		XLR Out - DL Series	Neutrik	NC3MD-L-1	Any Neutrik D Series Connectors
	1		XLR In - DL Series	Neutrik	NC3FD-L-1	Any Neutrik D Series Connectors
	1		IEC Inlet	Qualtek	719W-00/02	See Hairball Enclosure Product Page For Alternatives
	1		1/4 Amp Slow-Blow Fuse - 5mm x 22mm	Schurter	34.3111	
R23	1	250K	Output Pot - Log	Alpha	RV24AF-10-15R1-A250K	Digi-Key part #95A1D-Z28-EA0/301L is a nice upgrade. *See Note About Pots
R55	1	25K	Attack Pot - Lin or Log w/ SPDT Switch	Alpha	RV24A02F-10-15S1-BF4	*See Note About Pots
R56	1	5M	Release Pot - Lin	Alpha	RV24AF-10-15R1-B5M	*See Note About Pots
R71	1	2K	Zero Adjust Pot	Clarostat	53C22K	
Capacitors						
C1	1	.15uF	Capacitor - Film	Wima	MKP2-.15/100/5	
C2, C8	2	.15uF	Capacitor - Film	Sprague	225P15491XD3	
C3, C23	2	6.8uF	Capacitor - Electrolytic	Nichicon	UPW1J6R8MDD	
C4, C5, C12, C21	4	100uF	Capacitor - Electrolytic	Panasonic	EEU-FC1V101	Panasonic FC/FM and Nichion HE/PW
C6	1	33pF	Capacitor - Ceramic	Kemet	C315C330J2G5CA	Xicon ceramic disc: 140-100N5-330J-RC
C7, C10	2	1uF	Capacitor - Film	Sprague	225P10591YD3	
C9, C18	2	47uF	Capacitor - Electrolytic	Nichicon	UPW1H470MED	Panasonic FC/FM and Nichion HE/PW
C11	1	47pF	Capacitor - Ceramic	Kemet	C315C470J2G5CA	Xicon ceramic disc: 140-100N5-470J-RC
C14	1	.033uF	Capacitor - Film	Wima	MKP2-.033/100/5	
C15	1	.0047uF	Capacitor - Film	Wima	MKP2-4700/400/5	
C16	1	38pF	Capacitor - Ceramic	Kemet	C315C390J2G5CA	Subbed more common 39pf value, Xicon ceramic disc: 140-100N5-390J-RC
C17	1	1uf	Capacitor - Electrolytic or Film	Panasonic	EEU-FC1H1R0	Panasonic FC/FM and Nichion HE/PW
C19, C20	2	6.8uF	Capacitor - Tantalum	Kemet	T350F685K035AT	

C22	1	.22uF	Capacitor - Film	Wima	MKS2-.22/100/10	
C24	1	2200uF	Capacitor - Electrolytic	Panasonic	ECA-1VHG222	
C25,C26	2	2200uF	Capacitor - Electrolytic	Panasonic	ECA-1HHG222	
C27	1	.022uF	Capacitor - Film	Wima	MKP2-.022/100/5	Located on Attack Pot
Diodes						
CR1	1	1N914	Diode - Rectifier	Fairchild	1N914A	
CR2,CR3	2	FDH333	Diode - High Conductance	Fairchild	FDH333	Do Not Substitute
CR6	1	1N4740A	Diode - Zener	Fairchild	1N4740A	
CR7,CR8,CR9,CR10	4	1N4004	Diode - Rectifier	Fairchild	1N4004	
Transistors						
Q1,Q11	2	2N5457	Transistor - FET	Fairchild	2N5457	Supplied with Hairball Kit
Q2,Q4	2	J309	Transistor - FET	Fairchild	J309	
Q3,Q5,Q7,Q8,Q9,Q10,Q12,Q13	8	2N3708	Transistor - Bipolar	Central	2N3708	For MC77 style use 2N5088
Q6	1	2N3053	Transistor - Bipolar	Central	2N3053	
	1		Heat Sink for Q6	Aavid	578305B00000G	
Voltage Regulator						
VR1	1	7824	Voltage Regulator	Fairchild	L7824BBV	
	1		Heat Sink for VR1	Aavid	6237BG	
Resistors						
R4,R41	2	270R	Resistor - 1/4 Watt	Xicon	271-270-RC	
R5	1	27k	Resistor - 1/4 Watt	Xicon	271-27k-RC	
R6,R7	2	560K	Resistor - 1/4 Watt	Xicon	271-560k-RC	
R8,R11,R35,R66	4	10k	Resistor - 1/4 Watt	Xicon	271-10k-RC	
R9,R65	2	3.9M	Resistor - 1/4 Watt	Xicon	291-3.9M-RC	
R10	1	2.2M	Resistor - 1/4 Watt	Xicon	271-2.2M-RC	
R12,R74,R81,R82	4	1K	Resistor - 1/4 Watt	Xicon	271-1K-RC	
R13,R16,R38,R52,R53	5	47K	Resistor - 1/4 Watt	Xicon	271-47k-RC	
R14,R46	2	22k	Resistor - 1/4 Watt	Xicon	271-22k-RC	
R15	1	20K	Resistor - 1/4 Watt	Xicon	271-20k-RC	

R17,R34,R76,R77,R94	5	8.2K	Resistor - 1/4 Watt	Xicon	271-8.2K-RC	R77 located on Meter PCB (+8)
R18	1	3.6K	Resistor - 1/4 Watt	Xicon	271-3.6k-RC	Located on Meter PCB (+4)
R19	1	130K	Resistor - 1/4 Watt	Xicon	271-130k-RC	Located on Ratio PCB. Alternate 68k (271-68K-RC) if using R78 resistor
R20,R21,R22	3	56k	Resistor - 1/4 Watt	Xicon	271-56k-RC	Located on Ratio PCB
R24	1	15M	Resistor - 1/4 Watt	Xicon	291-15M-RC	
R25	1	3.3M	Resistor - 1/4 Watt	Xicon	291-3.3M-RC	
R26	1	33k	Resistor - 1/4 Watt	Xicon	271-33k-RC	
R27	1	12k	Resistor - 1/4 Watt	Xicon	291-12K-RC	
R28,R33	2	560	Resistor - 1/4 Watt	Xicon	271-560-RC	
R29	1	1.2M	Resistor - 1/4 Watt	Xicon	291-1.2M-RC	
R30	1	120k	Resistor - 1/4 Watt	Xicon	271-120K-RC	
R32	1	39	Resistor - 1/4 Watt	Xicon	271-39-RC	
R36	1	1M	Resistor - 1/4 Watt	Xicon	291-1M-RC	
R37	1	470k	Resistor - 1/4 Watt	Xicon	271-470k-RC	
R39,R51,R70	3	4.7k	Resistor - 1/4 Watt	Xicon	271-4.7k-RC	
R40,R49	2	2.4k	Resistor - 1/4 Watt	Xicon	271-2.4K-RC	
R42	1	182k	Resistor - 1/4 Watt	Xicon	271-182k-RC	
R43	1	38.3k	Resistor - 1/4 Watt	Xicon	271-38.3K-RC	
R44	1	5K	Multi-Turn Trim Pot (Tracking)	Xicon	T93YA502KT20	
R45	1	10M	Resistor - 1/4 Watt	Xicon	291-10M-RC	Located on Ratio PCB
R47	1	44.2k	Resistor - 1/4 Watt	Xicon	271-44.2K-RC	
R48	1	7.68k	Resistor - 1/4 Watt	Xicon	271-7.68k-RC	
R50	1	180	Resistor - 1/4 Watt	Xicon	271-180-RC	
R54,R61,R62	3	470	Resistor - 1/4 Watt	Xicon	271-470-RC	R54 located on Attack Pot, R61 and R62 located on Ratio PCB
R57	1	270k	Resistor - 1/4 Watt	Xicon	271-270K-RC	
R58	1	180	Resistor - 1/4 Watt	Xicon	271-180-RC	Located on Ratio PCB
R59,R75	2	2K	Multi-Turn Trim Pot (Q Bias/Null)	Vishay	T93YA202KT20	
R60,R67	2	3.9k	Resistor - 1/4 Watt	Xicon	271-3.9k-RC	
R63,R72	2	1.5k	Resistor - 1/4 Watt	Xicon	271-1.5k-RC	R63 located on Ratio PCB
R64	1	2.2k	Resistor - 1/4 Watt	Xicon	271-2.2K-RC	
R68,R69	2	820	Resistor - 1/4 Watt	Xicon	271-820-RC	
R73	1	680	Resistor - 1/4 Watt	Xicon	271-680-RC	

R78	1	LINK	Resistor - 1/4 Watt	Xicon	N/A	Alternate 47k: 271-47K-RC
R79	1	15k	Resistor - 1/4 Watt	Xicon	271-15K-RC	
R87	1	1.1k	Resistor - 1 Watt	Xicon	281-1.1K-RC	
R89	1	220	Resistor - 1/4 Watt	Xicon	271-220-RC	
Shorting Pin for R44						
	1		3 Pin Header	Molex	22-28-4030	
	1		Shorting Plug	Kobiconn	151-8010-E	
Test Point For Null Adjust						
	1		Test Point	Kobiconn	151-203-RC	
Optional Terminal Blocks						
	5		2 Contact Terminal Block	Molex	39880-0302	*See Note About Headers
	6		3 Contact Terminal Block	Molex	39880-0303	*See Note About Headers
About Pots: We recommend the Bournes 250K pot (sold by Digikey) for the output control. The output pot is in the audio chain and the Bournes part is a high quality pot with a similar feel to our input attenuator. The shaft is a little too long so you will need to add an extra 3/8" between the pot and rear of the panel for the knob to sit flush. The panel holes are drilled for 3/8" bushings. Our input attenuator and the Bournes output have 3/8" bushings. The Alpha parts have 1/4" bushings so they sit loosely in the hole. This is not an issue as you can center them and tighten the nut.						
About Terminal Blocks: Terminal blocks can be used on the points where wires are connected to the main PCB. They are not required and they do have advantages and disadvantages. The main advantage is that since the wire is connected to the main PCB by a screw terminal block, wiring errors can be easily fixed. The disadvantage is that the screw terminal connection is not as secure as a solder joint.						
VU Lamp/LED: You will need to provide voltage to light the VU meter. You will need a voltage dropping resistor. The value depends on if you have an LED version or lamp version and where you chose to source the voltage. Be aware the wattage requirements for this resistor.						
Update History						
02/01/2010:						
Added test point pins for null adjust						
03/07/2010:						
Changed output pot.						

06/02/2010:						
Changed value of R44 from 2K to 5K						
09/05/2010:						
Selected Smaller VR1 Heatsink						
01/09/2011:						
Selected clip-on VR1 Heatsink						
Updated out of stock parts						