

Nascom Microcomputers

NASCOM
3 amp POWER SUPPLY
CONSTRUCTION
NOTES

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NASCOM 3 AMP POWER SUPPLY

CONSTRUCTION NOTES

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1. Introduction.

The Nascom 3A P.S.U. is designed to provide the following outputs:-

<u>Voltage</u> (+5 %)	<u>Max. Current</u>
+ 12 V.	1 A
+ 5 V.	3 A
- 5 V.	0.5A
- 12 V.	0.5A

This is more than adequate to power a Nascom 1. with keyboard, Buffer board and at least one Memory expansion board.

2. PARTS LIST

<u>No. USED</u>	<u>TYPE</u>	<u>CIRCUIT REF.</u>	<u>DESCRIPTION</u>
1 x	LM323K	IC.1	+ 5V Regulator (3A)
1 x	LM340T12 or 7812	IC.2	+ 12V Regulator (1A)
1 x	LM 320T5 or 7905	IC.3	- 5V Regulator (1A)
1 x	LM320T12 or 7912	IC.4	- 12V Regulator (1A)
1 x	-	HS.1	4° C/W.Heatsink
3 x	-	HS.2-4	10° C/W.Heatsink
1 x	-	HS.5	20° C/W.Heatsink
1 x	-	D.1	4A, 50V Bridge Rectifier
1 x	-	D.2	2A, 100V Inline Bridge Rectifier
4 x	IN4001	D3,5,7,10	Diode
4 x	TIL209	D4,6,8,9	Light Emitting Diode (Red)
2 x	270R, 1/2W	R1,3	Resistor
2 x	1K0, 1/2W	R2,5	Resistor
1 x	10R, 10W	R4	Wirewound Resistor
2 x	3300uF, 16V	C1, 2	Electrolytic Capacitor
2 x	1000uF, 25V	C6, 10	Electrolytic Capacitor
8 x	2.2uF, 35V	C3,4,7,8,11,12,14 15	Tantalum Bead Electrolytic Capacitor
4 x	0.1uF, 16V	C5,9,13,16	Ceramic Capacitor
10 x	1 mm.	P.1-10	Solder Pin
2 x	-	(For HS.3,4)	Insulating Set
9 x	-	(For HS.1-5)	Nut, Bolt, Washer, Spring Washer Assembly
1 x			Printed Circuit Board
1 x		T.1	Mains Transformer
10 x	30 cm	(As below)	16/0.2 mm.Stranded Wire
1 x	(Colours, White, Black, White, Grey, Grey, Pink, Red, Black, Blue, Violet) 10 cm	(For Lk.1, Lk.2)	0.8 mm, Self Fluxing Enamelled Wire
1 x	2 m.	-	3 core mains lead.

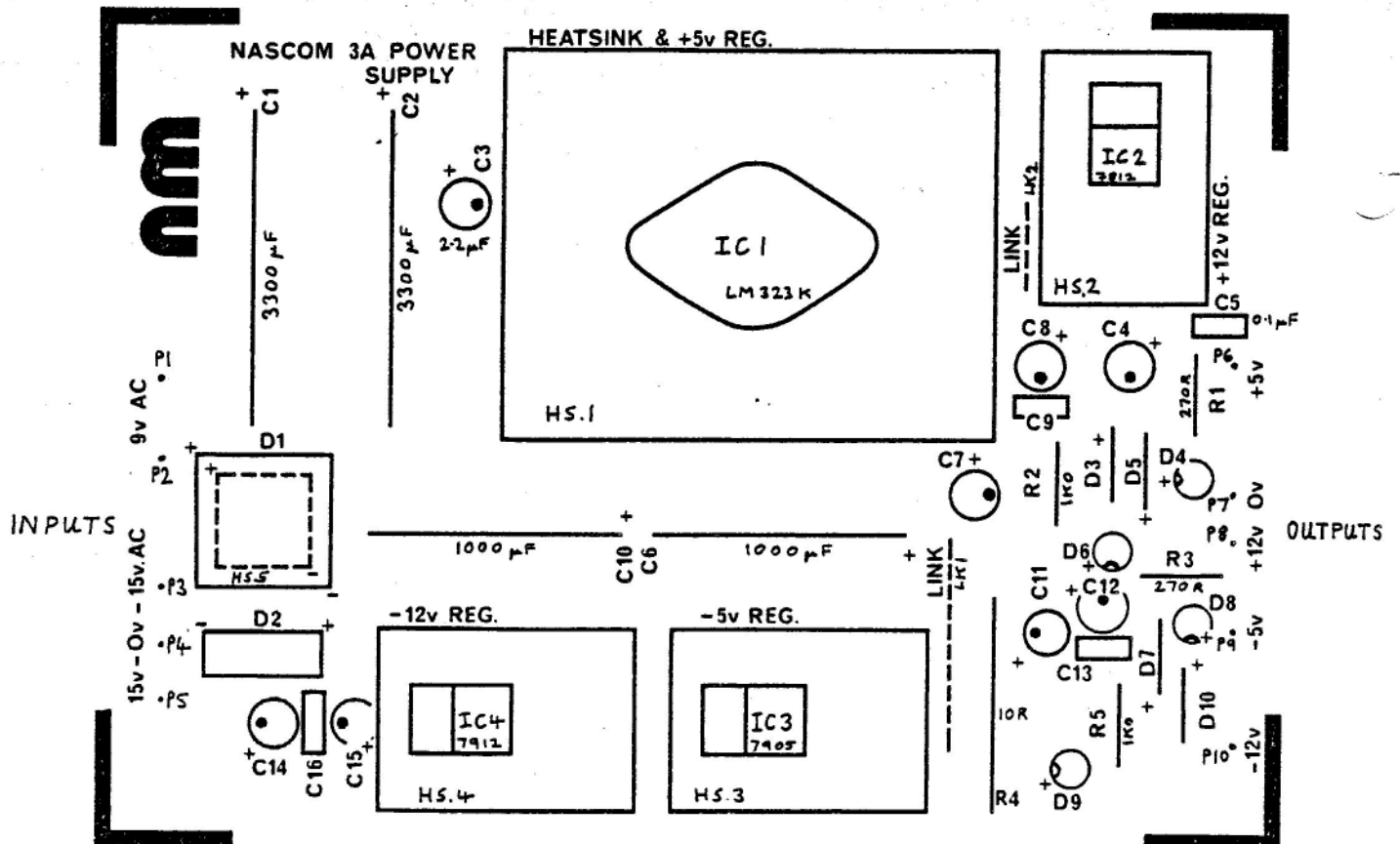
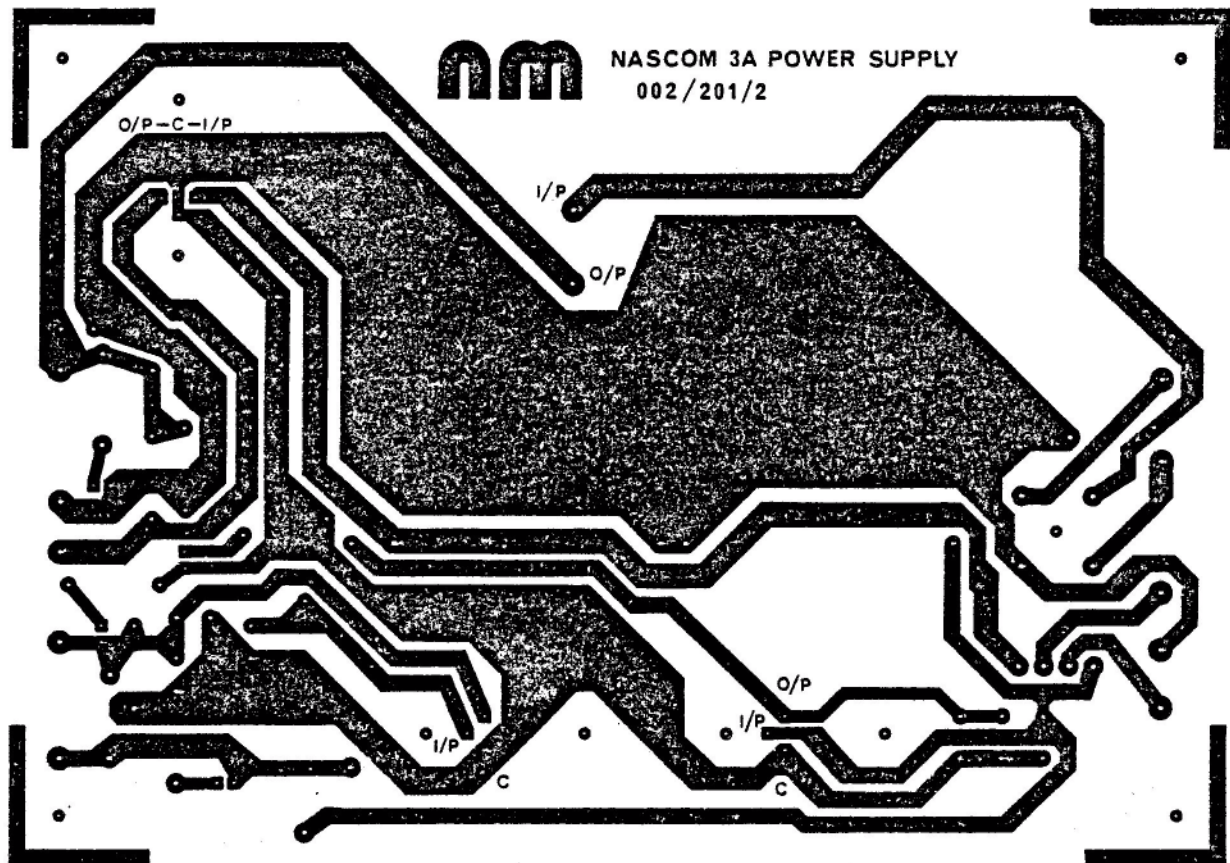
3. SUGGESTED ORDER OF CONSTRUCTION

NOTE: A soldering iron of at least 25W is preferred.

1. Insert 10 solder pins TP.1-10 for input and output wiring (see layout drawing).
2. Bolt IC.1 (metal power transistor type case) and HS.1 (large heatsink) to the board. Only one orientation is possible.
3. Bend leads of IC. 2,3 and 4 at right angles so as to pass through the holes provided.
4. Bolt IC.2 (+ 12V regulator) and HS.2 (medium heatsink) to the board.
5. Bolt IC.3 (-5V regulator), an insulator set and HS.3 to the board. Fit the components in the order Bolt, Plain washer, Black plastic insulating washer, IC., Clear plastic insulating sheet, Heatsink, P.C. Board, Spring washer, Nut. (The insulation provided for the two negative regulator heatsinks is not essential but avoids problems should they be accidentally shorted to ground).
6. Bolt IC.4 (-12V regulator), an insulator set (as above) and HS.4. to the board.
7. Bolt D.1 (Square bridge rectifier) and HS.5 (small heatsink) to the board. (Push the rectifier down flush with the board). Be careful to ensure correct orientation by observing the plus and minus marks.
8. Fit D.2 (inline bridge rectifier) observing correct polarity.
9. Solder all items inserted so far (and clip off surplus leads about 1/8 inch from board).
10. Fit 270 OHM resistors R1 and R3 (colour coded Red/Purple/Brown/Gold).
11. Fit 1K OHM resistors R2 and R5 (colour coded Brown/Black/Red/Gold).
12. Fit large 10 OHM resistor R4. (Not touching board).
13. Fit links LK.1 & LK.2 using enamelled wire provided.
14. Fit IN4001 Diodes D3, D5, D7 and D10.
15. Solder above items.
16. Fit 3300 uF. reservoir capacitors C1 & C2. Observe polarity as marked.
17. Fit 1000 uF. reservoir capacitors C6 & C10. Observe polarity as marked.
18. Fit 2-2uF Tantalum bead electrolytic capacitors C3, C4, C7, C8, C11, C12, C14 & C15. Be careful to observe correct polarity. If these components have no plus sign marked then the positive lead is on the right when the side with a blob of paint is viewed with the leads hanging down.
19. Fit 0.1 uF ceramic capacitors C5, C9, C13, C16. (These may be marked 104).
20. Solder above components.
21. Fit light emitting diodes D4, D6, D8, D9. The side with a small notch in the skirt should be next to the plus sign. Do not strain the leads by pushing the led's too close to the board.

22. Solder the led's, preferably using a heat sink on the leads.
(e.g. a pair of long nose pliers or tweezers).
23. Connect two grey, a black and two white wires from the transformer to the board as shown on the circuit diagram.
24. Connect a mains lead to the transformer taking care to insulate the tags for safety.
25. Switch on mains supply.
26. Check that all 4 led's are glowing.
27. Check that all 4 output voltages are correct (within 5%).
28. If all is in order switch off and connect as shown to your Nascom Microcomputer. Keep wires as short as possible.
29. The 4 corner holes may be used to mount the board if desired in a box or other enclosure; however, adequate ventilation must be provided. The best heat convection will occur with the long side of the board mounted vertically. Do not let any metal surface come near the solder side of the board in case of short circuits.

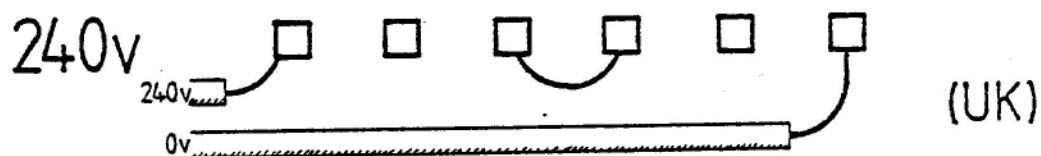
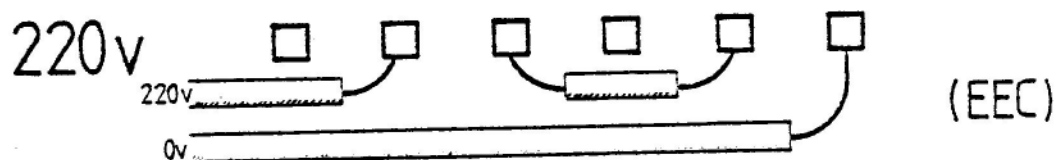
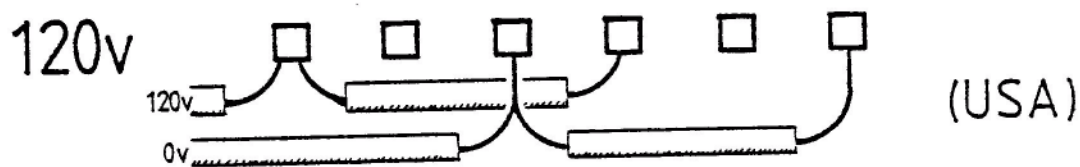
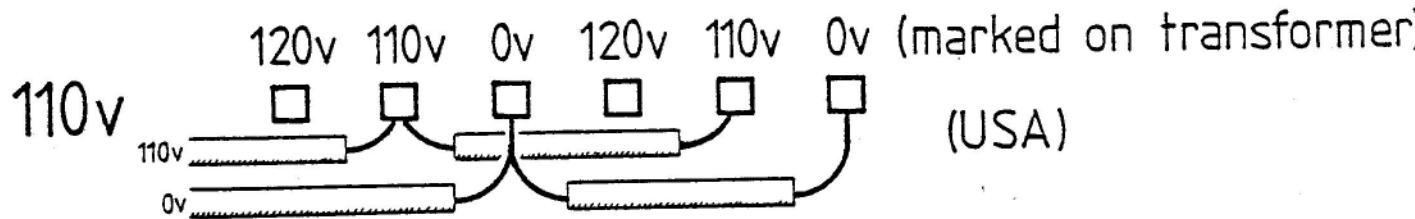




SPECIAL NOTE: transformer

The transformer supplied with this NM power supply unit may be configured for various mains input voltages.

Six tags are provided for connection to the primary windings. These are arranged in two groups. Their connection is shown below, the four most common mains voltages being allowed for.



IN ALL CASES THE EARTH WIRE MUST BE CONNECTED TO THE EARTH TAG IMMEDIATELY BELOW THE ROW OF PRIMARY TERMINALS.

The secondaries should be connected to the PCB as described in the Power Supply Construction Notes.

NB. WIRING COLOURS

In the EEC and the UK the standard colours for mains wiring are

LIVE	BROWN
NEUTRAL	BLUE
EARTH	GREEN and YELLOW