

4 MB PC-SIMM in NMS 8250/55/80 SWITCHABLE BETWEEN 2 AND 4 MB

Update your NMS8250/55 to 4Mb memory

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Required parts

Part

1 x 74LS670
2 x 74LS125
1 x 74LS08
1 x 74LS00
1 x 74LS157
1 X 74ls139
1 X 10k ¼ W resistor
1 single pole switch
1 x 4MB 30 pin SIMM

Preparations

Take the motherboard carefully out of the housing

Remove IC 133 - IC 136 (41464) near the VDP. Best is to cut the pins and remove the remains
Remove R 127 and R 128 (both 100 ohm) in the neighbourhood IC 131 (74LS125).

Prepare the following IC's:

74LS670 : cut the pins 1, 2, 3, 6, 7, 9, 10 and 15 half.
74LS125(1): cut the pins 2, 3, 5, 6, 8, 9, 11 t/m 13 half
74LS125(2): cut the pins 2, 3, 5, 6, 8, 9, 11 t/m 12 half
74LS08 : cut the pins 1 t/m 6 and 8 t/m 13 half
74LS00 : cut the pins 1 t/m 6 and 8 t/m 13 half.
74LS139 : cut the pins 1 t/m 7 and 9 t/m 15 half.
74LS157 : cut the pins 2 t/m 7 and 9 t/m 14 half.

Insert IC's

Insert the 74LS670	on top of IC 149 (74LS670)	and is now called IC 149B.
Insert the 74LS125	on top of IC 131 (74LS125)	and is now called IC 131B.
Insert the 2 nd 74LS125	on top of IC 131B (74LS125)	and is now called IC 131C.
Insert the 74LS139	on top of IC 159 (74LS139)	and is now called IC 159B.
Insert the 74LS08	on top of IC 157 (74LS08)	and is now called IC 157B.
Insert the 74LS00	on top of IC 180 (74LS00)	and is now called IC 180B.
Insert the 74LS157	on top of IC 147 (74LS157)	and is now called IC 147B.

Solder all remaining whole pins to the IC pins underneath.

Attach a wire to IC 131B (74LS125) between pin 13 and pin 10.

Attach a wire to IC 157B (74LS08) between pin 14, pin 13 and pin 12.

Attach a wire to IC 157B (74LS08) between pin 11, pin 10 and pin 9.

Attach a wire to IC 180B (74LS00) between pin 14, pin 13 and pin 12.

Attach a wire to IC 180B (74LS00) between pin 11, pin 10 and pin 9.

Attach a wire to IC 180B (74LS00) between pin 3 and pin 4.

Attach a wire to between pin 12 IC 180 (74LS32) and pin 1 and 2 of IC 180B (74LS00) (RFSH).

Attach a wire to between R 130 (100 ohm, on the side of the Video RAM) and pin 5 of IC 180B (74LS00) (WE).

Attach a wire between printspot R 128 (side of RAM) and pin 3 of IC 157B (74LS08) (CAS 0).

Attach a wire between printspot R 127 (side of RAM) and pin 6 of IC 157B (74LS08) (CAS1).

Attach a wire between pin 1 and 4 of IC 157B (74LS08) to pin 2 IC 111 (74LS32) (CAS2/E).

Attach a wire between pin 2 and 5 of IC 157B (74LS08) to pin 6 IC 180B (74LS00).

Attach a wire between pin 7 IC 149 (74LS670) and pin 2 IC 147B (74LS157) (MA16)

Attach a wire between pin 11 of IC 161 (74LS243) and pin 3 of IC 131B (74LS125) and pin 3 of IC 149 (74LS670) (D3).

Attach a wire between pin 2 of IC 131B (74LS125) and pin 6 of IC 149 (74LS670) and pin 3 of IC 147B (74LS157) (MA17).

Attach a wire between pin 15 of IC 149B (74LS670) and pin 6 of IC 131B (74LS125) and printspot pin 11 of IC 176 (74LS367) (D4).

Attach a wire between pin 5 of IC 131B (74LS125) and pin 10 of IC 149B (74LS670) and pin 5 of IC 147B (74LS157) (MA18).

Attach a wire between pin 1 of IC 149B (74LS670) and pin 8 of IC 131B (74LS125) and printspot pin 13 of IC 176 (74LS367) (D5).

Attach a wire between pin 9 of IC 131B (74LS125) and pin 9 of IC 149B (74LS670) and pin 6 of IC 147B (74LS157) (MA19).

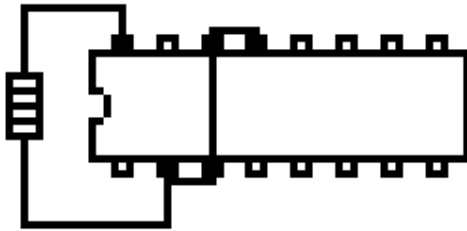
Attach a wire between pin 2 of IC 149B (74LS670) and pin 11 of IC 131B (74LS125) and pin 5 of IC 178 (74LS37) (D6).

Attach a wire between pin 12 of IC 131B (74LS125) and pin 7 of IC 149B (74LS670) and pin 11 of IC 147B (74LS157) (MA20).

Attach a wire between pin 7 of IC 178 (74LS367) and pin 3 and 5 of IC 131C (74LS125) (D7).

Attach a wire between pin 2 of IC 131C (74LS125) and pin 6 of IC 149B (74LS670) and pin 10 of IC 147B (74LS157) (MA21).

Place the resistor of 10K ohm as shown in the next figure on IC 159B (74LS139).
Use a small plier to bend the wire of the resistor to make it fit like in the next figure.



Attach a wire between pin 15 of IC 159B (74LS139) and pin 8 of IC 147 (74LS157) (Gnd).

Attach a wire between pin 1 of IC 159B (74LS139) and pin 1 IC 131 (74LS125) (#EN).

Attach a wire between pin 7 of IC 159B (74LS139) and pin 1 of IC 131C (74LS125).

Attach a wire between pin 9 of IC 159B (74LS139) and pin 4 of IC 131C (74LS125).

Attach a wire between pin 3 of IC 149B (74LS670) and pin 6 of IC 131C (74LS125).

Place the switch in between pin 2 and 8 of IC 159B (74LS139) with flexible wire.

Switch open	= 4 MB 8 bits mapper and 8 bits back annotation
Switch closed	= 2 MB 7 bits mapper and 7 bits back annotation

Placement of the PC SIMM to the bottom of the motherboard

Turn the mainboard to the other side.

Cut all ic pins on the bottom between IC 147 and IC 177 .
Attach double sided sticky paper between the PC-SIMM and the board.

In the next description the wires are soldered directly to the PC SIMM
The 3 wires to IC 147B (74LS157) are lead to a empty IC hole.

pin	Omschrijving	To
30	Vcc + 5 Volt	IC 133 pin 9
29	Din(9)	
28	CAS(9)	
27	RAS	IC 133 pin 5
26	Dout(9)	
25	D7	IC 133 pin 17
24	NC	
23	D6	IC 133 pin 15
22	Gnd	IC 133 pin 18
21	WE	IC 133 pin 4
20	D5	IC 133 pin 3
19	L10	IC 147B pin 9 (74LS157)
18	L9	IC 147B pin 7 (74LS157)
17	L8	IC 147B pin 4 (74LS157)
16	D4	IC 133 pin 2
15	L7	IC 136 pin 10
14	L6	IC 136 pin 6
13	D3	IC 134 pin 17
12	L5	IC 136 pin 7
11	L4	IC 136 pin 8
10	D2	IC 134 pin 15
09	Gnd	IC 134 pin 18
08	L3	IC 134 pin 11
07	L2	IC 134 pin 12
06	D1	IC 134 pin 3
05	L1	IC 134 pin 13
04	L0	IC 134 pin 14
03	D0	IC 134 pin 2
02	CAS	IC 134 pin 16
01	Vcc + 5 Volt	IC 134 pin 9

Control all wires and soldering points!

When the computer starts normally the modification is very likely succesfull!

When the computer starts it will still tell you that 128K RAM is present, that is the normal behaviour of the ROM and does not tell the modification failed.

Thanks to JP Grobler for making his NMS8250 mainboard available for this description