



# Tech Info Library

## Memory Configurations: Portables & PowerBook (9/96)

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TOPIC -----

What are the memory configurations for the Portable and PowerBook computers?

DISCUSSION -----

The following table includes the memory configurations for Portable and PowerBook computers.

For information about upgrading the memory in another Macintosh computer, use the search string "memory configurations" to locate the following articles:

"Memory Configurations: Power Macintosh (1 of 4)"  
"Memory Configurations: Servers (2 of 4)"  
"Memory Configurations: Other Desktop Macintosh (4 of 4)"

This article has two parts:

- A table of portable Macintosh computers' RAM Configurations.
- A series of notes, each with a number corresponding to a number in the table's "Notes" column.

Begin\_Table

Portable Macintosh RAM Configurations  
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System	MB of RAM Soldered on Board	Number of Expansion Slots	Possible RAM Configs (MB)	RAM Speed	Notes
-----	-----	-----	-----	-----	-----
Portable*	1	1	1,2,3,4,5,6, 7,8,9	100ns	2,3,4
-----	-----	-----	-----	-----	-----
Portable*	1	1	1,2,3,4,5,6,	100ns	2,3,4

(backlit)			7,8		
PowerBook 100*	2	1	2,4,6,8	100ns	1,5
PowerBook 140*, 145*	2	1	2,4,6,8	100ns	1,6
PowerBook 145B*	4	1	4,6,8	100ns	1,7
PowerBook 150	4	1	4 to 40	70ns	1,10
PowerBook 160*	4	1	4,6,8,10,12,14	100ns	1,7
PowerBook 165*	4	1	4,6,8,10,12,14	85ns	1,7,8
PowerBook 165c*	4	1	4,6,8,10,12,14	85 or 100ns	1,7,8
PowerBook 170*	2	1	2,4,6,8	100ns	1,6
PowerBook 180*	4	1	4,6,8,10,12,14	85 or 100ns	1,7,8
PowerBook 180c*	4	1	4,6,8,10,12,14	85 or 100ns	1,7,8
PowerBook 520/520c	4	1	4 to 36	70ns	1
PowerBook 540*/540c	4	1	4 to 36	70ns	1
PowerBook Duo 210*	4	1	4 to 24	70ns	1,9
PowerBook Duo 230*,250*	4	1	4 to 24	70ns	1,9
PowerBook Duo 270c*	4	1	4 to 32	70ns	1,9
PowerBook Duo 280*/280c	4	1	4 to 40	70ns	1
PowerBook 190, 190cs	4 or 8	1	4 to 36 or 40	70ns	1,14

PowerBook 5300	8	1	8 to 64	70ns	1
-----	-----	-----	-----	-----	-----
PowerBook 5300c, 5300cs	8 or 16	1	4 to 64	70ns	1,11
-----	-----	-----	-----	-----	-----
PowerBook 5300ce	16	1	4 to 64	70ns	1,12
-----	-----	-----	-----	-----	-----
PowerBook 2300c	8	1	4 to 56	70ns	1,13
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End\_Table

Notes

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\* Product no longer being produced by Apple.

- 1) These systems have 32-bit-clean ROMs. Computers with 32-bit-clean ROMs can take advantage of more than 8 MB of physical RAM under System 7 or higher.
- 2) The ROMs in these systems are not 32-bit-clean, but with the 32-Bit System Enabler under System 7.1 or MODE32 with versions of System 7 prior to 7.1, they can run in 32-bit mode and can take advantage of more than 8 MB of physical RAM.
- 3) The Macintosh Portable has 1 MB of RAM soldered to the main logic board. You can add more RAM using an expansion card. The Macintosh Portable memory expansion card can have from 1 MB to 4 MB of RAM. The backlit Macintosh Portable memory expansion card can have 1 MB to 3 MB of RAM.
- 4) If the processor-direct slot (PDS) is used for other peripherals, the maximum RAM is 5 MB for the Macintosh Portable and 4 MB for the backlit Macintosh Portable, using a memory expansion card.
- 5) The PowerBook 100 has 2 MB of pseudostatic RAM on the main logic board and one expansion slot. Additional RAM can be added using a RAM expansion card for a maximum of 8 MB.
- 6) The PowerBook 140, 145, and 170 have 2 MB of pseudostatic RAM on the main logic board and one expansion slot. The 4 MB configuration shipped from Apple has a 2 MB RAM expansion card installed. To expand up to 8 MB, replace the 2 MB RAM expansion card (if installed) with either a 4 MB or 6 MB RAM expansion card.
- 7) The PowerBook 145B, 160, 165c, 180 and 180c have 4 MB of pseudostatic RAM on the main logic board and one expansion slot. The 4 MB configuration shipped from Apple has no RAM expansion card installed. To expand up to 6 MB, 8 MB, or 14 MB, install a 2 MB RAM expansion card, 4 MB RAM expansion card, or 10 MB RAM expansion card, respectively (note

that the PowerBook 145B can be expanded to a maximum of 8 MB).

- 8) For the PowerBook 165, 165c, 180, and 180c, we suggest 85ns pseudostatic RAM. Use of 100ns pseudostatic RAM results in a performance decrease of approximately 5-10%.
- 9) The PowerBook Duo 210, Duo 230, Duo 250 and Duo 270c have 4 MB of low-power DRAM on the main logic board and one expansion slot. The 4 MB configuration shipped from Apple has no RAM expansion card installed, while the 12 MB configuration has a 8 MB expansion card installed. To expand your Duo, add the appropriate size memory expansion card.
- 10) The PowerBook 150 uses Duo type memory. However in order to add more RAM, you must first have a memory adapter installed. The part number for this adapter is M3179LL/A.
- 11) The PowerBook 5300cs and 5300c come with either 8 or 16 MB of RAM soldered on to the logic board. Either configuration is expandable to 64 MB of RAM.
- 12) The PowerBook 5300ce comes with a 16 MB expansion card installed.
- 13) The PowerBook 2300c has 8 MB of RAM on the main logic board and one expansion slot. The 8 MB configuration shipped from Apple has no RAM expansion card installed, while the 20 MB configuration has a 12 MB expansion card installed.
- 14) The PowerBook 190 and 190cs come with either 4 or 8 MB of RAM soldered on the main logic board and one expansion slot. The model that comes with 4 MB on the logic board is expandable to 36 MB. The model that comes with 8 MB on the logic board is expandable to 40 MB.

#### Article Change History:

- 23 Sep 1996 - Updated title and added blurb for related articles.
- 18 Oct 1995 - Removed irrelevant column from table.
- 12 Oct 1995 - Added new PowerBook computers to table.

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