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PowerBook: Liquid Crystal Display Refresh Rates (11/95)

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TOPIC ---

What are the refresh rates for the displays in the Macintosh PowerBook 5300,
2300, and 190 series computers (both Active and passive matrix, color and
grayscale)? How does this compare to the display on my desktop system?

DISCUSSION --

This article provides general information on display refresh rates used in
Macintosh PowerBook computers. However, it is difficult to compare Cathode Ray
Tubes (CRTs), used with desktop Macintosh computers, to passive and active
matrix Liquid Crystal Displays (LCDs), used in PowerBook computers, because it
is an entirely different technology. To complicate things further, the two types
of LCDs use two totally different technologies to create the image on the
screen.

Active Matrix

Active matrix displays, also called Thin-Film Transistor (TFT), have transistors
that are individually addressed and charged. The amount of time that it takes
for the charge to diminish is somewhere around 20 milliseconds (ms). We
currently use a refresh rate of 62Hz on all (color and grayscale) TFT displays
which means that each row of pixels gets refreshed every 16ms.

Passive Matrix

Passive matrix displays, also called Film SuperTwisted Nematic (FSTN), are even
better in that aspect. Once their pixels receive a charge, the time it takes for
the pixel to lose its charge can be measured in seconds. In fact, the fastest
time that the computer can turn a pixel off is over 60ms. The passive matrix
screens use a refresh rate of 73Hz for grayscale passive matrix (MFSTN) displays
and 79Hz for color passive matrix (CFSTN) displays, each row of pixels is
refreshed every 12ms.

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