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Performa 600: Internal Video Support

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Performa 600: Internal Video Display Support

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TOPIC -----

This article describes the Macintosh Performa 600's internal video display support.

DISCUSSION -----

The following chart lists the monitors supported by Performa 600's internal video:

MON ID	Monitor	Cols/ Rows	Vertical Refresh	Horizontal Refresh	Bandwidth
0 0 1	reserved				
0 1 0	12" RGB	512 x 384	60.15 Hz	24.48 KHz	15.6672 MHz
1 1 0	12" B/W, 13" RGB	640 x 480	66.67 Hz	35.0 KHz	30.24 MHz
0 0 0	reserved				
0 1 1	VGA	640 x 480	59.94 Hz	31.47 kHz	25.18 MHz
1 0 0	reserved				
1 0 1	reserved				
1 1 1	no monitor connected				

* 640 x 480 displays are supported at 8 bits/pixel with 512K VRAM and 16

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bits/pixel with 1 MB of VRAM

Note: The monitor ID pins 3, 2, and 1 refer to pins 10, 7, and 4 on the DB-15 external video port.

The monitor ID must be asserted in the monitor by grounding lines for zeros and leaving no connection for ones. No connects are pulled high by pullup resistors on the Performa 600 logic board.

Standard Macintosh video timing calls for a 30.24 MHz pixel clock for 640 x 480 displays. Performa 600 deviates from the standard by using the CPU clock, at 31.3344 MHz, as a pixel clock for those displays. This results in an extra 32 pixels per horizontal line. The active pixels are center in the active video field with 16 extra pixels on each side. Horizontal and vertical scan rates remain unchanged. The effect of this change is that square pixels are visually 3% thinner. The 12" monochrome display compensates for this aberration, but the 13" color display does not. Monitor ID 2 is grounded within Performa 600, which triggers the 12" monochrome display to realize that it is connected to a Performa 600 and allows the monitor to compensate for the slightly different timing.

VGA monitors use the monitor ID of 011 which is the same as the two-page monochrome monitor. VGA monitors use the extended monitor sense codes which is enabled by tying the ID 3 and ID 2 lines together at the monitor end. The extended sense for a VGA monitor is 01 01 11.

One other anomaly in Performa 600 is that it does not support 1 bit/pixel mode on 512 x 384 monitors.

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