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Macintosh IIci: Internal Video Circuitry Versus Video Card

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TOPIC ---

North American Philips Electronics makes a color RGB monitor that works well (with appropriate cable) with the Macintosh 8-Bit Color Video Card. However, when attached to the Macintosh IIci built-in video port, the monitor displays a blank screen.

They have tested their monitor with the Macintosh IIci in combination with the 8-Bit Video Card, and it works OK. Can you provide a specific list of differences (pinouts, voltages, signal characteristics) between the RBV port and the 8-bit card port?

DISCUSSION -----------------------------------

The most likely cause of the problem is that the cable or monitor being used does not ground pin 4. This is required for the built-in video circuitry to identify a monitor as an AppleColor High-Resolution RGB Monitor or equivalent. If none of the Monitor ID pins are grounded, the built-in video assumes no monitor is attached.

The following portion of text from the Macintosh IIci Technical Tour stack should clarify why the internal video circuitry of the Macintosh IIci behaves differently than the Macintosh II High-Resolution Video Card. Here is the text:

The Macintosh IIci has the equivalent of a video card built into the main logic board. This means that Macintosh IIci owners do not have to purchase a separate video card to use an Apple monitor with the unit. This also means that all three NuBus slots remain available for other NuBus cards. Other video cards can be added to any one of the three NuBus slots.

The built-in video circuitry supports the following monitors:

Apple High-Resolution Monochrome (@ 2, 4, 16, and 256 colors/grays)
AppleColor High-Resolution RGB (@ 2, 4, 16, and 256 colors/grays)
Apple Macintosh Portrait Display (@ 2, 4, and 16 colors/grays)

The pinouts for this port are as follows:

01	RED.GND	Red Video Ground
02	RED.VID	Red Video
03	CSYNC	Composite Sync.
04	MON.ID1	Monitor ID, Bit 1
05	GRN.VID	Green Video
06	GRN.GND	Green Video Ground
07	MON.ID2	Monitor ID, Bit 2
08	nc	(No Connection)
09	BLU.VID	Blue Video
10	MON.ID3	Monitor ID, Bit 3
11	C&VSYNC.GND	CSYNC & VSYNC Ground
12	VSYNC	Vertical Sync.
13	BLU.GND	Blue Ground
14	HSYNC.GND	HSYNC Ground
15	HSYNC	Horizontal Sync.
Shell	CHASSIS.GND	Chassis Ground

The pin requirements for making a cable for a Macintosh IIci to a Portrait display are as follows:

DB-15 (Macintosh IIci)	DB-25 (Portrait)
03	05
07	08
08	04
10	03
11	07,10
12	02
14	01
15	06
Shell	Shell

There is an issue with some third-party video cables and third-party video cable extenders. Some of those cables included just the necessary pins to support the Apple High-Resolution Monochrome Monitor or the AppleColor High-Resolution RGB Monitor with the Macintosh II High-Resolution Video Card.

One problem with some of these cables is that pins 4, 7, and 10 are used to identify the monitor that is connected. With the Macintosh II High-Resolution Video Card, pin 4 was a ground line, but pins 7 and 10 were not used. With the color and monochrome monitors, the problem is that some of those cables leave out pin 4, and tie to another ground. In these cases, the built-in video fails to detect and identify the monitor. This causes built-in video to be disabled. However, if the cable or cable extender connects pin 4, the cable should allow the Macintosh IIci to correctly identify the Apple High-Resolution Monochrome and the AppleColor High-Resolution RGB Monitors. Most cables support the other signals required for these two monitors.

A second problem is that, given the fact that the new Macintosh IIci-to-Portrait Display cable has a 15-pin connector on one end, it can be connected to third-party video cable extenders. However, all of the lines that were unused by the Macintosh II High-Resolution Video Card are now used to support the Macintosh Portrait Display. As a result, any video cable extender that does not include these lines will not support the Portrait Display. In this case, the Macintosh IIci may not be able to identify the monitor because lines 7 and 10 probably will not be connected and the required video signal lines will not be there either.

SPECIAL NOTE: To meet FCC part 15 requirements, the Apple-supplied cables have to be used.

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