Power Macintosh DOS Card: Video Sync For LCD Panels (6/95)

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TOPIC --

I'm unable to synchronize the Power Macintosh 6100/66 DOS Compatible in DOS mode
when using a variety of LCD panels.

For example, when connected to an nView MediaPro LCD panel in Apple 640x480
mode, both Macintosh and Windows screens display fine, but the panel won't
display DOS text at all. When connected in VGA mode, DOS text displays OK, but
Macintosh and Windows screens "tear" at the top of the display.

DISCUSSION --

We took measurements using a digital scope with automated time and frequency
calculation. The Power Macintosh DOS Compatibility Card produces timing signals
which drive Apple monitors, and includes flexibility to work with non-Apple
multiple scan monitors. In some of the Power Macintosh DOS Compatibility Card
video modes there are slight timing differences between Macintosh and Windows.
This is usually not a problem because most monitors can work within specific
timing variances. In other words, if the frequencies are off by a small amount,
monitors can still synchronize and provide a stable image.

It was reported that the InFocus LCD would not work with the Power Macintosh DOS
Compatibility Card, but after testing with different Macintosh/DOS video modes,
we did find a combination that worked (see detail section below). Other reports
confirm that the nView and Proxima Ovation panels also work. From what we can
tell, some LCD panels on the market are intolerant to small variances in video
timing or work within only a specific frequency.

General Suggestions and Background

If possible, test the LCD panel at various video scan rates. When using an LCD
panel with the Power Macintosh 6100/66 DOS Compatible computer, test the panel
with both the manufacturer provided adapter and no adapter (direct). Using an
Enhance video adapter with a multiple scan display lets you test more
configurations and frequencies. You may have to adjust the LCD controls
(horizontal and vertical position, sync polarity, and so on) to center the
image, remove tearing, or properly synchronize the LCD image. Using an Apple
14-inch display or setting the Enhance video adaptor to "J" is the recommended
video timing for Macintosh, DOS, or Windows when connecting to an LCD display.

The following describes the video signaling for different display connections:

• Apple 14-inch display (640x480)
Video modes for Macintosh, DOS, and Windows will be similar but not exactly the same (horizontal = 35 kHz, vertical = 67 Hz).

• Apple 16-inch display (832x624)
Video modes for Macintosh, DOS, and Windows will be similar but not exactly the same (horizontal = 49.75 kHz, vertical = 74.5 Hz).

• VGA (using Enhance video adapter "G")
Video modes for Macintosh and Windows will be similar, but not exactly the same (horizontal = 31.45 kHz, vertical = 60 Hz). DOS will operate at its normal video rate (horizontal = 31.75 kHz, vertical = 71 Hz).

Detail In Using a Power Macintosh DOS Compatibility Card with a Proxima LCD
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There are several issues when using a Proxima LCD display panel to project the screen through an overhead projection unit on a Power Macintosh 6100/66 DOS Compatible computer. Below are details as to how the video circuitry on the DOS Compatibility Card works which is necessary to understand what is happening.

There are three monitor settings in the PC Setup control panel, they are 14-inch, 16-inch, and VGA. You can only choose different settings if a multiple scan monitor is being used. If an Apple 14-inch or 16-inch monitor is used, PC Setup automatically picks the corresponding setting and cannot be changed.

If the setting is either 14-inch or 16-inch, the DOS Compatibility Card will generate the same video signals the Macintosh normally uses for those monitors. In other words, if 14-inch is selected, the DOS Compatibility Card will generate video for 640x480 at 67 Hz. This is not VGA video even though the driver selected in Windows is VGA.

Even though the DOS Compatibility Card is generating Macintosh video signals, they are not exactly the same. We looked at the video signals with an oscilloscope and discovered that the timing is the same but the sync pulses change in width. Apparently, this slight variation is not a problem for Apple monitors but it does distort the display on some LCD panels.

If VGA is chosen in the PC Setup control panel, the DOS Compatibility Card will generate true VGA video signals. In this case, switching between the Macintosh and DOS sides causes a major change in the video signals. This VGA setting only works with devices that can switch resolutions while in operation.

Our testing has shown that the best setup with an LCD panel is to use a 14-inch Apple monitor if the system has a monitor connected along with the LCD panel. If a monitor is not being used, then a video adapter can be used to force the Macintosh into using 640x480 Macintosh video.

The video adapter is hardware that is placed in line between the Macintosh and video cable changing the sense pins the Macintosh sees. The most popular use of

these adapters is to use non-Apple monitors with Macintosh systems.

On the DOS Compatible system the adapter should be placed between the cable connected to the monitor and the 4-connector cable that ships with the DOS Compatible system. It needs to be placed in this location because the DOS Compatibility Card actually senses which monitor is connected.

LCD panels behave differently. We have tested the InFocus panel and were able to make it work using a video adapter described above. This panel has a separate box that is used to connect an Apple monitor in line, however we had trouble with it. We could only make the panel work by connecting it directly to the Macintosh.

Success in using the nView panel with a video adapter has also been reported to us, and we have used a Proxima Ovation panel without an adapter and monitor connected, just the panel.

In conclusion, using LCD panels with the DOS Compatibility Card is a little delicate. It can be done with a little patience and experimentation. The setup needed differs depending on the panel being used.

The adapter used by some is available from Sony. The information is listed below. This adapter has a dial and dip switches for configuration. The dip switches should be set 1-6 OFF and 7-9 ON. The dial should be set to position "M", but we also made it work on position "J". We suggest experimenting with the setup well in advance of it's actually being needed because it could take a while to get it all working.

Sony MacView Cable Adapter (Universal Macintosh to PC Monitor)
Part # T-9985-647-1
Sony Service Parts for Order: 1-800-488-7669

There is also a Macintosh to Macintosh model in case the projection pad you are using has a Macintosh video connector instead of a VGA connector.

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