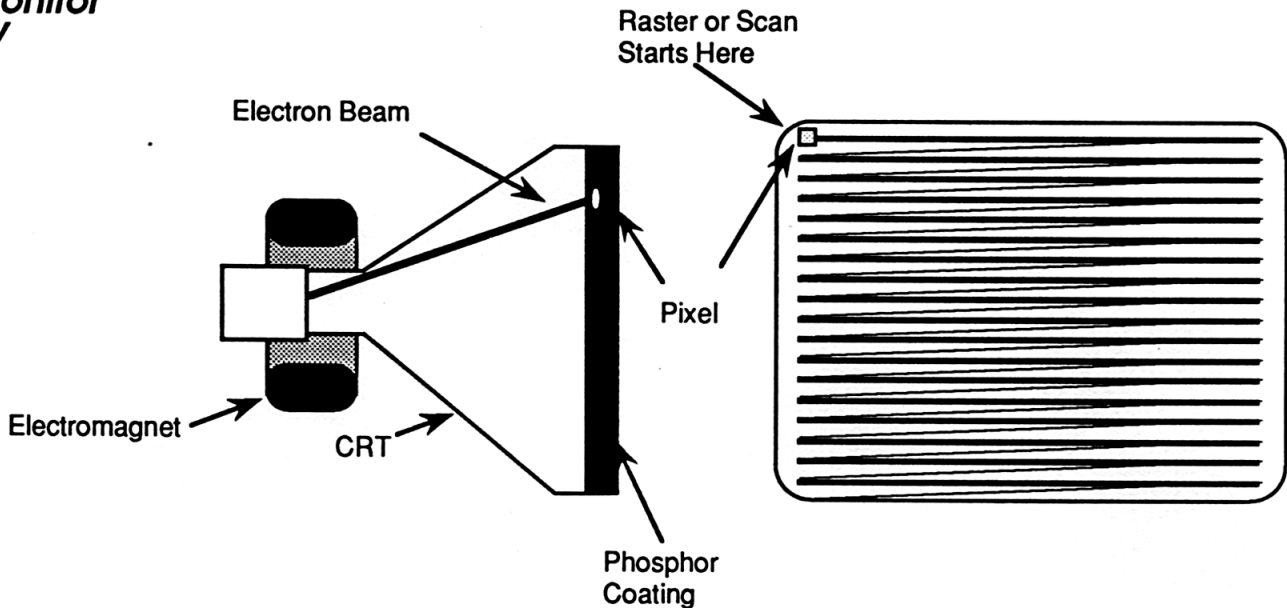


GETTING THE SIGNALS STRAIGHT...

Or Just Enough Video to Get By

1. CRT - Cathode Ray Tube VDT - Video Display Terminal Monitor TV



2. Pixel - Picture Element

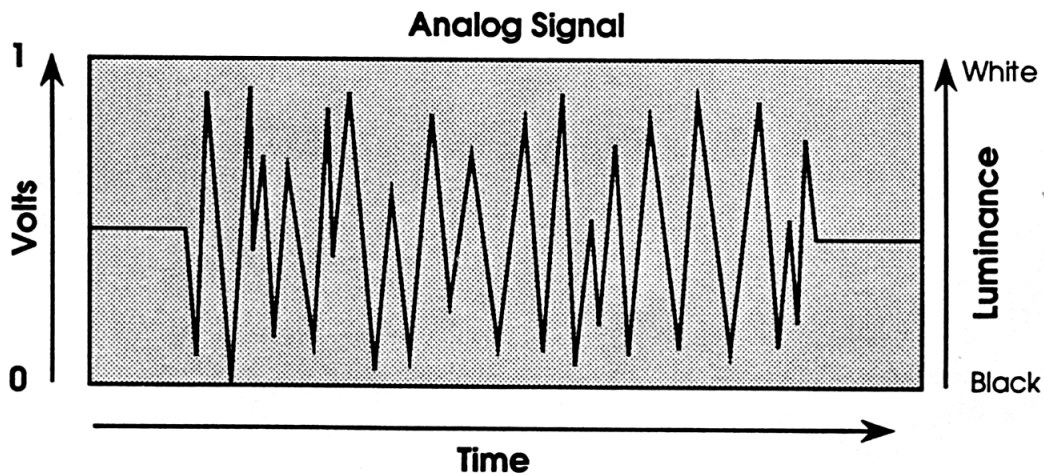
Video Pixel

Computer Pixel

(needs to be square for graphics)

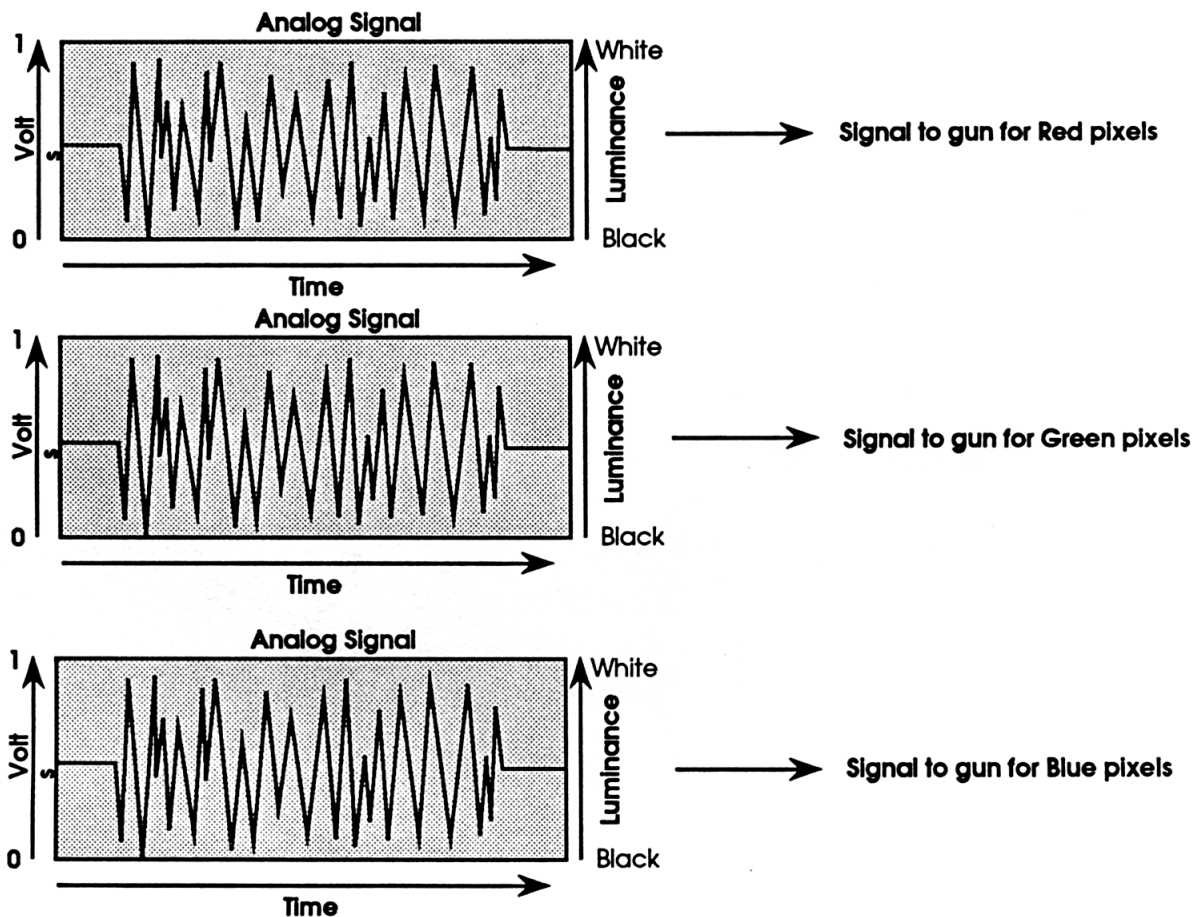
Resolution is usually described in terms of Horizontal and Vertical Pixels
(i.e. 512X484, 640X480 or 1024X768)

3. Analog Signals



4. Color Monitors and RGB

RGB stands for Red, Green and Blue signals. All color CRTs use RGB signals because they utilize 3 beams (electron guns) to create a color image.

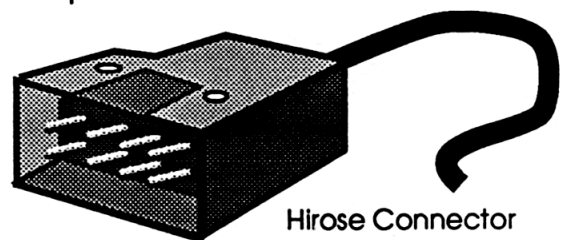
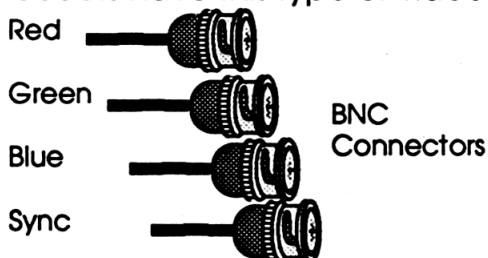


5. Sync

The sync signal is used to determine where the beginning and end of each field occurs so that the top of the picture is always at the top of the screen.

6. RGB and Sync Signal

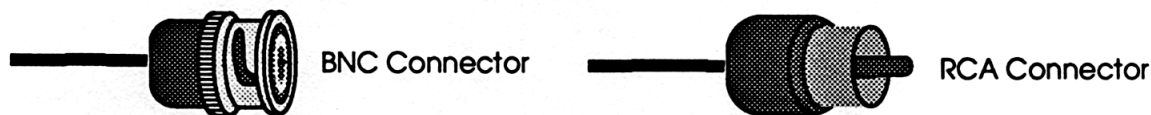
Most computer monitors use this type of signal. It is the highest quality form of video because each color has a separate line for its information thus a higher bandwidth.* Usually the cable used for this type of monitor has four wires, one each for Red, Green, Blue and one for sync (Separate sync). Sometimes the sync is on the same wire as the Green signal. (called Sync on Green). Most of EPD's products have this type of video input and output.



*Bandwidth can be compared to water flowing through a pipe, the larger the diameter of the pipe the greater the water flow. The higher the bandwidth of a system the greater amount of detail or information.

7. Composite Video

This is the type of signal used by most consumer video equipment and all televisions. A single wire is used to carry the sync signal, and a luminance signal and the color information is sent as an encoded signal called chroma. The television decodes this signal into RGB signals for the CRT. Because a single wire is used there is less bandwidth and therefore less detail in the image.

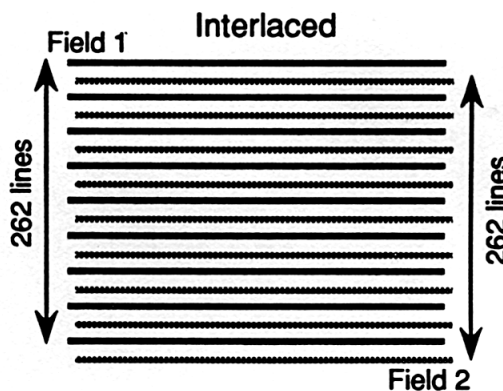


8. NTSC Standard - Facts and Figures

1. 525 lines vertically, 484 displayed.
2. 60 fields per second
3. 2 fields = 1 frame
4. One frame every 1/30th sec.
5. Horizontal Resolution - 512 - 768
6. Interlaced display
7. 15Khz = 30 frames/second

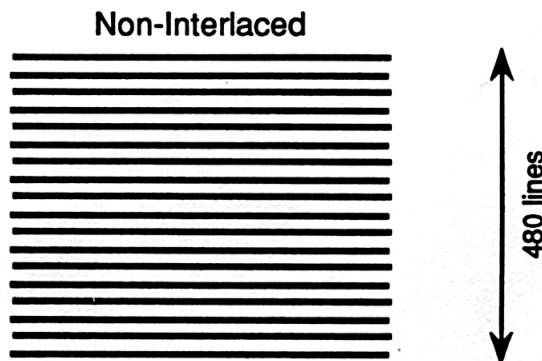
9. Interlaced Video

Two fields of 262 lines are shown alternately slightly displaced to comprise a frame. Produces flicker.

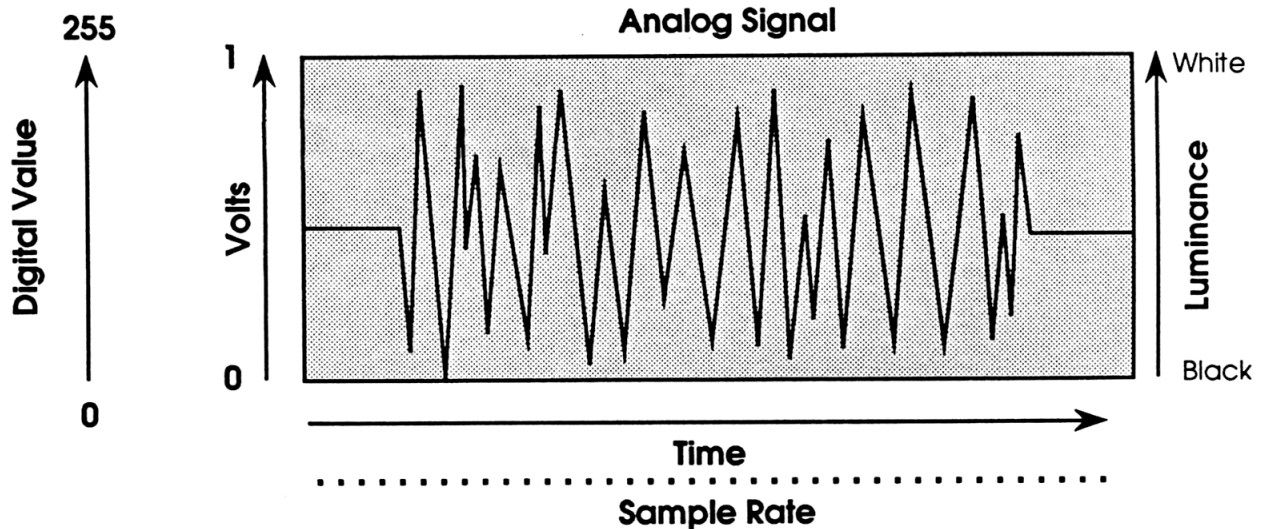


10. Non-Interlaced Video

Frames only - whole screen is updated each scan.



11. Digital Signals



12. Binary Data Basics

	256	128	64	32	16	8	4	2	1		
8 BIT	0	0	0	1	0	1	1	0	1	= 45	256 colors
	RED			GREEN			BLUE				
24 BIT	01011011			11000110			10010011			= 1 Pixel	1.7 million colors

13. Framestore

- | | |
|---|-----------|
| 1. Converts analog video signal to digital data | - A to D |
| 2. Stores digital signal in memory | - Capture |
| 3. Converts digital information to analog video | - D to A |

The framestore allows live video to be Digitized or Captured for Printing/Transmission or Storage

14. Computer Video Standards

Most are not directly compatible with our equipment.

EGA	Non-interlaced
CGA	Hi Scan Rates (30-66KHz)
VGA	CGA & EGA are Digital
Mac II	Higher resolution

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SOFTWARE SYSTEMS
X60989

FEBRUARY 13, 1989