

## MONITORS AND VIDEO BOARDS

My friend Tom (WB9LNL) reminded me that I should write an article about monitors and the internal cards that drive them. What are the types of monitors you might see at a swapfest? How do you recognize what they are without turning them on? If you spot a computer without a monitor, how can you tell what kind of video card is installed? Which kinds of monitors and boards should you avoid? Which are good?

First, let me give you a list of the types of monitors and cards that are out there, in a nice tabular form so that you can take the list with you next time you shop at a swapfest. The basic cards (circuit board inside the case, to which the monitor is connected) are shown below. Abbreviations: MDA = Monochrome Display Adapter; HGA = Hercules Graphics Adapter; CGA = Color Graphics Adapter; EGA = Enhanced Graphics Adapter; VGA = Video Graphics Adapter.

PARAMETER	MDA	HGA	CGA	EGA	VGA
Screen resolution	720x350	720x350	640x200	640x350	720x400
Number of colors	*4	*4	16	64	256k
Dots to make a character	9x14	9x14	8x8	8x14	9x16
Graphics capable?	No	Yes	Yes	Yes	Yes
Vertical freq (MHz)	50	60	60	60	70
Horizontal freq (MHz)	18	18	16	22	32
Pins on adapter/cable	9	9	9	9	15
How to spot this card: PRN = printer connector; RCA = RCA jack; DIPSW = dipswitch	PRN	PRN	RCA	2 RCA and DIPSW	See number of pins

\*The definition of "colors" includes normal, highlighted, reverse video and underlined for MDA and HGA systems.

Please note that this is a summary; I have left out the PGA and MCGA, which you are unlikely to encounter. I have also rounded off the frequency data, and given only the maximum values for several parameters.

Now let us talk turkey. The MDA and HGA cards are used to drive monitors which display white on black, green on black or orange on black screens. They are not capable of showing red, green and blue colors. The MDA displays only characters, and for this it is excellent. The letters are nice and sharp and readable. The HGA is the same, but also has some graphics capabilities. However, special drivers have to be used with the software that shows the graphics, which is a pain. Although both these monochrome displays and cards are considered to be obsolete, they are perfect for packet and even for simple word processing, both of which are character-based activities. Don't ever pass up a good buy on a used system just because it is monochrome, unless you have a particular reason for wanting color. Yes, a 486 or even a Pentium will work beautifully with a monochrome screen. Both the MDA and the HGA cards commonly have a DB-25 printer connector, as well as the DB-9 monitor connector. It is difficult to distinguish between an MDA and HGA card without opening the case to inspect them, but that is really unimportant, anyway.

CGA stinks. Avoid it. Yes, it is a color display, but look at the resolution in the table above. Even text characters are fuzzy and indistinct, because only 64 dots (8 x 8) are used to form each letter, as opposed to 126 dots for MDA and HGA systems, 112 dots for EGA and 144 dots for VGA. As indicated above, you can spot a CGA card by simply looking at the back of a computer. If a card has a 9-pin connector and a single RCA jack, it is most likely a CGA card. These are definitely boat anchors; neither the cards nor the monitors are manufactured today.

EGA is also obsolete, but the systems provide nice, sharp characters and good color. If everything else in a used system is satisfactory, do not reject the system because it is EGA. You can recognize the cards because they most often sport two RCA jacks and a dipswitch, in addition to the 9-pin connector.

VGA is the current mode of choice, and the cards are easy to spot because they have a 15-pin connector, with the pins arranged in three rows. Some VGA systems have nearly photographic quality, with sharp, brilliant colors. These are the first choice in 1995.

I am writing this using a 486 - 66 MHz computer attached to a Sony Trinitron MultiScan HG monitor (VGA). The letters are bright white on a blue background, and very pleasing to the eye. However, I could just as easily have done the job (and sometimes do) on my old XT, with its orange on black monochrome screen. The sharpness of the characters would not have been significantly less, nor would the computer have responded significantly more slowly to my keystrokes. Keep that in mind when looking for a used computer for packet and general shack use. Fit the tool to the job.

In summary, any monitor/card shown above is fine, except for CGA. Choose EGA or VGA if your tasks will require graphic capabilities, or if you absolutely want color. Otherwise, an inexpensive monochrome system will be fine. Happy computing, and successful shopping! Stan