Monitor Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
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<tbody>
<tr>
<td>Screen Size</td>
<td>Diagonal length of screen surface</td>
</tr>
<tr>
<td>Refresh Rate</td>
<td>The number of times an electronic beam fills a video screen with lines from top to bottom in one second</td>
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<tr>
<td>Interlaced</td>
<td>The electronic beam draws every other line with each pass, which lessens the overall effect of a lower refresh rate</td>
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<tr>
<td>Dot Pitch</td>
<td>The distance between adjacent dots on the screen</td>
</tr>
<tr>
<td>Pixels</td>
<td>The basic unit of programmable colour on a computer display or in a computer image</td>
</tr>
<tr>
<td>Resolution</td>
<td>The number of spots or pixels on a screen that can be addressed by software</td>
</tr>
<tr>
<td>Multiscan</td>
<td>Monitors that offer a variety of refresh rates so that they can support several video cards</td>
</tr>
<tr>
<td>Green Monitor</td>
<td>A monitor that saves electricity and supports the EPA Energy Star Program</td>
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<tr>
<td>CRT</td>
<td>Cathode Ray Tube</td>
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<tr>
<td>TFT</td>
<td>Thin Film Transistor</td>
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ENERGY STAR qualified monitors automatically enter two successive low-power modes of less than or equal to 15 watts and 8 watts after a period of inactivity. New chip technologies make power management features more reliable, dependable, and user-friendly than even just a few years ago.
**Video Card**

The video card (AKA graphics card or display adapter) connects the monitor to the motherboard.

Sometimes the motherboard provides ‘onboard graphics’, which means that a chip is mounted on the motherboard and the monitor connector is included in the back panel of the ATX motherboard.

![Monitor connector](image)

When a graphics chip is ‘onboard’, it borrows your system RAM in order to provide good output.

The video card consists of a digital analogue converter (DAC) which converts the digital signals produced by the motherboard to analogue signals which are used by the monitor.

The video card has a BIOS which stores video firmware instructions.

It also has video memory which holds the information that is processed by the DAC. Screen images are stored in the RAM and the video card converts the information into an analogue signal which can be output by the monitor. If the card has a high amount of RAM onboard, a better display resolution and colour depth can be achieved.

**Video standards**

**CGA** - Color Graphics Adapter. These monitors had very poor resolution - 320x200 with four colours or 640x200 in monochrome.

**EGA** (Enhanced Graphics Adapter) - had a maximum resolution of 640x350 with 16 colours.

**VGA** (Video Graphics Array) had improved resolution and was the first analog video standard. The maximum resolution is 640x480, 16 colour or 256 colours with 320x200 resolution.

**SVGA** (Super VGA) has become the standard on all new PCs. Resolutions can be between 800x600 and 1600x1200 with 256 and 16 million colours.

**VESA** - Video Electronics Standards Association supports SVGA.
Typical monitor problems and how to troubleshoot them

**Power Light (LED) Does Not Go On; No Picture**

- Is the monitor plugged in? Verify that the wall outlet works by plugging in a lamp, radio, etc.
- If the monitor power cord is plugged into a power strip or surge protector, verify that the power strip is turned on and working and that the monitor is also turned on. Look for an on/off switch on the front and back of the monitor. Some monitors have both.
- If the monitor power cord is plugged into the back of the computer, verify that the connection is tight and the computer is turned on.
- A blown fuse could be the problem. Some monitors have a fuse that is visible from the back of the monitor. It looks like a black knob that you can remove “(no need to go inside the monitor cover). Remove the fuse and look for the broken wire indicating a bad fuse.
- The monitor may have a switch on the back for choosing between 110 volts and 220 volts. Check that the switch is in the right position.
- If none of these solutions solves the problem, the next step is to take the monitor to a service centre.

**Power LED Light Is On, No Picture on Power-Up**

- Check the contrast adjustment. If there’s no change, then leave it at a middle setting.
- Check the brightness adjustment. If there’s no change, then leave it at a middle setting.
- Is the cable connected securely to the computer?
- If the monitor-to-computer cable detaches from the monitor, exchange it for a cable you know is good, or check the cable for continuity.
- If this solves the problem, reattach the old cable to verify that the problem was not simply a bad connection.
- Confirm that the proper system configuration has been set up. Some older motherboards have a jumper or DIP switch you can use to select the monitor type.
- Test a monitor you know is good on the computer you suspect to be bad. Do this and the previous step to identify the problem. If you think the monitor is bad, make sure that it also fails to work on a good computer.
• Check the CMOS settings or software configuration on the computer. When using Windows 9x, boot into safe mode (press F5 during the boot) to allow the OS to select a generic display driver and low resolution. If this works, change the driver and resolution.

• Reseat the video card. For a PCI card, move the card to a different slot. Clean the card’s edge connectors, using a contact cleaner or a white eraser. Do not let crumbs from the eraser fall into the expansion slot.

• If there are socketed chips on the video card, remove the card from the expansion slot and, using a screwdriver (non magnetic), press down firmly on each corner of each socketed chip on the card. Chips sometimes loosen because of thermal changes. This condition is called **chip creep**.

• Change a good video card for the video card you suspect is bad. Test the card you think is bad on a computer that works. Test a video card you know is good on the computer that you suspect may be bad. Whenever possible, do both.

• If the video card has socketed chips that appear dirty or corroded, consider removing them and trying to clean the pins. You can use a clean pencil eraser do this. Normally, however, if the problem is a bad video card, the effective measure is to replace the card.

• Go into CMOS setup and disable the shadowing of video ROM. Test the RAM on the motherboard with diagnostic software.

• For an older motherboard that supports both VESA and PCI, if you are using a VESA video card, try using a PCI card. For a motherboard that is using an AGP video card, try using a PCI video card in a PCI slot.

• Change the motherboard for one you know is good. Sometimes, though rarely, a peripheral chip on the motherboard of the computer can cause the problem.

**Power On, But Monitor Displays the Wrong Characters**

• Wrong characters are usually not the result of a bad monitor but of a problem with the video card. Change the video card for one you know is good.

• Exchange the motherboard. Sometimes a bad ROM or RAM chip on the motherboard displays the wrong characters on the monitor.
Monitor Flickers and/or Has Wavy Lines

- Monitor flicker can be caused by poor cable connections. Check that the cable connections are snug (fit well).

- Does the monitor have a degauss button to eliminate accumulated or stray magnetic fields? If so, press it.

- Check if something in the office is causing a high amount of electrical noise. For example, you might be able to stop a flicker by moving the office fan to a different outlet. Bad fluorescent lights or large speakers can also produce interference. Two monitors placed very close together can also cause problems.

- If the vertical scan frequency (the refresh rate at which the screen is drawn) is below 60 Hz, a screen flicker may appear. Use Control Panel, Display icon to make the adjustment. Use the highest refresh rate offered.

- For older monitors that do not support a high enough refresh rate, your only cure may be to purchase a new monitor.

- Before making a purchase, verify that the new monitor will solve the problem. Check Control Panel, Display, Settings to see if a high resolution (greater than 800 X 600 with more than 256 colours) is selected. Consider these issues: 1. The video card might not support this resolution/colour setting. 2. There might not be enough video RAM; 2 MB or more may be required. 3. The added (socketed) video RAM might be of a different speed than the soldered memory.

Graphics Display or the Screen Goes Blank When Loading Certain Programs

This problem may be caused by the following:

- A special graphics or video accelerator card is not present, or is defective.

- Software is not configured to do graphics, or the software does not recognise the installed graphics card.

- The video card does not support the resolution and/or colour setting.

- There might not be enough video RAM; 2 MB or more might be required.

- The added (socketed) video RAM might be of a different speed than the soldered memory.

- The wrong adapter/display type is selected. Start Windows 9x from safe mode to reset the display.
Screen Goes Blank 30 Seconds or One Minute After the Keyboard Left Untouched

- A “Green” motherboard (one that follows energy-saving standards) used with an Energy Saver monitor can be configured to go into a stand-by or doze mode after a period of inactivity. This might be the case if the monitor resumes after you press a key or move the mouse. Stand-by times can be set for periods from as short as 20 seconds to as long as one hour.

- The power LED light normally changes from green to orange to indicate Doze Mode.

- You might be able to change the doze features by entering the CMOS menu and looking for an option such as Power Management, or in Windows 9x by opening Control Panel and selecting Display, Screen Saver.

- Some monitors have a Power Save switch on the back of the monitor. Make sure this is set as you want.

Poor Quality Colour Display

For this problem, try the following:

- Read the documentation for the monitor to learn how to use the colour-adjusting buttons to fine-tune the colour.

- Exchange video cards.

- Add more video RAM; 2 MB or 4 MB might be required for higher resolutions.

- Check if a fan or large speaker (speakers have large magnets) or another monitor nearby could be causing interference.

Picture Out of Focus or Out of Adjustment

For this problem, try the following:

- Check the adjustment knobs on the control panel on the outside of the monitor.

- Change the refresh rate. Sometimes this can make the picture appear more focused.

- You can also make adjustments inside the monitor that might solve the problem. If you have not been trained to work inside the monitor, take the monitor to a service centre.

Crackling Sound

- An accumulation of dirt or dust inside the unit might be the cause. Someone trained to work on the inside of the monitor can vacuum the inside.