Guide to LCD Monitor Terminology

LCD Monitor Terminology

This Guide to LCD Monitor Terminology was developed to help you understand the many terms, names, phrases, specifications and buzzwords associated with LCD monitors. It is similar to an LCD monitor terms dictionary. We hope you find this useful, but please don't hesitate to contact us directly at any time if we can help cut through the clutter of any LCD monitor terminology. Bookmark this page so you have it handy!

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Vibration
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Video Cable Converter
Video Inputs
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What is 4K UHD?

4K UHD (Ultra-High-Definition) is a 16:9 video resolution with 3840 x 2160 pixel resolution. It is called 4K because the 4K cinema standard (DCI 4K) stretches horizontally to over 4,000 pixels (4096 x 2160). While it is the newest resolution in the consumer market, it is already being relabelled to UHD-1 to make way for 8K which will take over as UHD-2. 4K is exactly double the horizontal and vertical resolution of Full HD/FHD (1920 x 1080) for a total of 4 times as many pixels.

What is a 5-Wire Resistive Touch Screen?

A resistive touch screen monitor is composed of a glass panel and a film screen, each covered with a thin metallic layer, separated by a narrow gap. When a user touches the screen, the two metallic layers make contact, resulting in electrical flow. The point of contact is detected by this change in voltage, and registers the X & Y coordinates from a touch.

However, image quality is not as clear as with other touch technologies which use glass.

What is 24 VDC Power?

24VDC is a direct current power standard growing in popularity due to its increased safety and cost savings. VAC systems will have voltages above 100V, whereas 24VDC keeps the voltage at a much safer level.

What is ABS?

Acrylonitrile butadiene styrene (ABS) is a common thermoplastic polymer. It is a form of plastic with higher impact resistance and toughness. ABS polymers are resistant to aqueous acids, alkalis, concentrated hydrochloric and phosphoric acids, alcohols and animal, vegetable and mineral oils. ABS enclosures are also much easier to customize with colors since it allows paint to adhere more than steel.

What is AC/DC Power?

AC/DC refers to different types of current that can run through electric circuits. Monitor rated rated AC/DC will operate on 110-220VAC, as well as 12VDC. AC provides more power, but DC is safer to use.

What is an All-In-One Monitor?

All-in-One refers to monitors with mini computer system embedded into the monitor. This allows for ease of use and space saving since an external computer is not needed but will raise the price of the monitor. Also, if an all-in-one is damaged and in needs replacing, it is more costly to replace an all-in-one than a stand-alone monitor or touch screen.

What is Ambient Light?

Ambient light is any light in the surrounding environment. It is sometimes called “available light” since it refers to any source of light that is not explicitly supplied by the monitor. An ambient light sensor can be added to a monitor to automatically adjust the monitor’s brightness to best match the ambient light.

What is Anti-Glare Glass?

AG glass is added to protect the monitor's LCD panel. When sunlight hits AG glass, the light energy is dispersed equally across the entire screen; these are no reflection "hot spots". The AG coating results in a matte finish on the screen.

What is Anti-Reflective Glass?

AR glass is added to protect the monitor's LCD panel. When sunlight hits AR glass, the light energy is consolidated into a small but very bright reflected spot of light; the image on the rest of the screen stays in tact. By tilting or turning the monitor a few degrees, the operator can usually eliminate the bright spot entirely from his screen, and see clear start images even in direct bright sunlight.

What is Aspect Ratio?

The aspect ratio of a LCD display is the proportional relationship of its width compared to its height. The two numbers are commonly separated by a colon. The most common aspect ratios are 16:9 (aka widescreen) and 4:3 (closer to the shape of a square monitor, such as old CRT's and TV's). It is best to choose a monitor with the same aspect ratio as your video signal. You cannot customize a monitor's native aspect ratio, so it is critical to know the aspect ratio of your incoming video signal beforehand.

What is Audio in a monitor?

Some monitors include built-in speakers that can play audio from your source. If a monitor does not have speakers built in, you may be able to run an aux cable from the audio output to an external speaker.

what is Auto Restart After Power Loss?

Auto re-start after power loss is a built-in feature, standard with all TRU-Vu monitors which ensures video is immediately displayed upon restoration of power following a power loss.

What is an Automated Ambient Light Sensor?

An automated ambient light sensor (sometimes shortened to ALS) on an LCD monitor allows for automatic brightness adjustment based on the environmental light surrounding the monitor. Ambient Light Sensors allow users to set brightness and timing ranges to control the intensity of these automatic adjustments. This means users have the ability to specify the maximum and minimum brightness levels the Ambient Light Sensor can adjust between. Additionally, you can specify how long you would like the sensor to wait before adjusting the brightness (between 1 and 60 seconds).

what is a Bezel?

The bezel is the outside frame or edge that surrounds the monitor's front glass or LCD panel. For aesthetics or hygiene, some people prefer frameless, Zero-Bezel monitors.

what is Bit Depth?

The bit depth is sometimes referred to as color depth and when referring to a pixel can be defined as bits per pixel. It defines how many colors the monitor can reproduce. The more bits, the more colors. The number of colors available for any X-bit image is just 2X. Therefore, a 24-bit (224)color monitor will produce 16.7 million colors.

what is Brightness on a monitor?

Luminance (AKA Brightness) is the measurement of how much light a monitor emits. The SI unit for luminance is Candela per Square Meter (Cd/m²). One Cd/m² is equal to one "nit," a more common term with LCD monitors. The measure of nits a LCD display emits will be the main factor in determining the monitor's perceived brightness. A monitor luminance of around 250-350 nits will work well indoors and most monitors fall in this range. 400-700 nits would be ideal for daylight use (Daylight Viewable monitors). 1,000 nits or more is required for viewing in direct, bright sunlight (Sunlight Readable monitors)

what is a BNC Connector?

Bayonet Neill–Concelman (BNC) is a locking connector that carries composite audio or video over a single coaxial cable. The name comes from the two inventors, Paul Neill and Carl Concelman, and the bayonet mount locking mechanism. BNC is used for composite audio or video on video devices. RCA connector jacks can be used with BNC equipment by inserting an adapter.

what is BNC Loop-Thru?

BNC Loop-Thru refers to a BNC input and BNC output on the same device. This will "loop" the input signal back out of the device (as an output) to send to other equipment. For example, BNC Loop-Thru enables you to have a camera connected to a monitor that displays the image. The monitor then sends those same video images to second monitor (in another area) or to a DVR (digital video recorder).

what is cd/m2?

Candela per square meter (cd/m2) is the SI unit of luminance. 1 cd/m2 is equal to 1 nit of brightness. Both nit and cd/m2 measure the amount of light emitted from a monitor. The higher the number, the brighter the monitor screen.

what is a Coax cable?

Coaxial cable (Coax) was first used in 1858 and is still used today for cable, phone, internet, and many other radio frequency signals. It is called Coaxial because the inner conductor and the outer shied (both copper) share a geometric axis.

what is Color Gamut?

The color gamut is a certain complete subset of colors. Gamut is adopted from the field of music where it means the set of pitches of which musical melodies are composed. In color theory, the color gamut of a certain device or process is that portion of the color space that can be represented or reproduced. When certain colors cannot be expressed within a particular color model, those colors are "out of gamut." A color gamut is the range of colors that a monitor is capable of reproducing.

what is Color Temperature on a monitor?

Color temperature is a way to describe light appearance provided by a video source or monitor. Color temperature is measured in Kelvin (K) and typically ranges from 2500K to 7500K. Higher Kelvin results in a cooler, bluer, daylight color temperature. Lower Kelvin results in a warmer, redder, candlelight color temperature. A balanced color temperature where the colors look natural for the scene is considered "white balanced." This is when the color white looks like a true white without any other color present. NTSC, PAL, and now ATSC standards suggest video content on monitors to be displayed using 6500K. However, not all content adheres to this, so monitors may need to be tuned for the content to achieve white balance.

What is Composite BNC?

BNC is a composite analog signal that transmits either audio or video with a locking connector. BNC cables give true 75 ohm resistance and includes video, color, and sync signals all within one cable.

what is Contrast Ratio?

The contrast ratio measures the range of brightness to darkness the monitor can produce. The end ratio is presented as X:1, where X represents the size of the range. The higher the number, the better the image quality. This is measured by showing the whitest white and comparing it to the blackest black on screen. The static contrast ratio is tested using the same image (usually a black and white checkered display) on screen to measure the range. Dynamic contrast ratio is unrealistic, and will inflate this number greatly by adjusting the screen settings during testing.

what are the Controls on a monitor?

The control of a LCD monitor is usually accomplished through the OSD (On-Screen Display) via a small group of pushbuttons on the rear or front of the monitor, or via an IR remote that allow the user to access the monitor's settings.

what is CRT?

CRT stands for Cathode-Ray Tube. It was the original technology used in the first television sets. CRT research dates back to the early 1890s but wasn't commercially produced as television sets until 1934. The CRT is a vacuum tube containing electron guns that shoot electrons onto a fluorescent screen. Magnetic deflection from different types of coils is used to direct the electrons to form the signal's picture. This is why original TV sets had such large backs; all of these components needed room to shoot, deflect, and catch electrons.

what is Dim-to-Black?

A monitor with Dim-to-Black control means the monitor's up and down arrow buttons have been programmed to adjust the monitor's brightness and contrast at the same time. Dim-to-Black is useful in applications where the monitor is constantly used in different lighting environments. Rather than searching through the OSD (On-Screen Display) menu each time to adjust the screen's brightness, Dim-to-Black allows for manual transitions on the fly. This is different from the Ambient Light Sensor, which adjusts the monitor's brightness automatically.

what are Dimensions on a monitor?

The dimensions of a monitor refer to the size of the enclosure of the monitor, measured from outer edge to outer edge of the enclosure.
Dimensions are usually recorded in inches and millimeters and shown as Width (W) x Height (H) x Depth (D).

what are Display Colors on a monitor?

Display Colors is the number of colors the monitor can display. The higher, the better. These numbers are always shown in millions unless it is a dated monitor. Standard LCD monitors have 16.7 million colors, which equals 24-bit color. Color bits and display colors are directly related since display colors is based on the power of two. This is because 2 raised to the 24th power comes out to ~16.7 million.

what is DVI?

DVI stands for Digital Video Interface; it is a video-only signal. DVI uses a locking connector. DVI-I (Integrated) works with both digital and analog signals, one of the only connectors to allow this. DVI-D (Digital) works with digital only signals and allows for higher resolution. 1920 x 1200 is the highest resolution DVI can support, but only up to 15 feet. Lower resolutions

(1280 x 1024) can be transmitted up to 49 feet.

what is EMC?

EMC stands for Electromagnetic compatibility. EMC is the ability of electrical equipment and/or systems to function acceptably in their electromagnetic environment. EMC focuses on the emission, susceptibility, and immunity of electronic equipment in regards to EMI (electromagnetic interference).

what is EMI?

EMI stands for Electromagnetic Interference. EMI is when an external electronic source disrupts another electronic device's operation with competing electromagnetic (EM) fields. This only occurs when the EM field is strong enough to upset the operation of other electronic equipment. Broadcast stations and other large transmitters can cause machine-made EMI, while anomalies such as solar flares can cause naturally occurring EMI.

what is a monitor Enclosure?

The enclosure of a monitor is what surrounds the screen and all other components. Enclosures offer different looks, feels, and advantages and disadvantages. For example, most waterproof monitors will have 304 stainless steel or aluminum to avoid corrosion. Lightweight monitors will generally feature a ABS enclosure, a nylon-reinforced plastic for added durability. Powder-coated steel is another material used in many industrial-grade monitor solutions which offers increased protection and durability.

what is a monitor's Enclosure Rating?

A monitor's enclosure rating will tell you the standard rating regarding its resistance to moisture, dust and solid objects.. Two of the most common standardized ratings are IP (Ingress Protection) and NEMA (National Electrical Manufacturer Association).

what is Half-sine Wave?

A half-sine shock wave is a shock impulse with the shape of a half sine wave. These are part of classical shock testing and shows how the object responds to shock over time. Half-sine waves have a more curved shock wave than haversine shock waves, although similar.

what is HDCP?

HDCP stands for High-Bandwidth Digital Copyright Protection. HDCP protects digital copyrighted content as it travels from a device to your TV. Services like Netflix require an HDCP to be present somewhere within your signal flow to view their content. Almost all digitally compatible devices today have some form of HDCP built in.

what is HDMI?

HDMI stands for High Definition Multimedia Interface; it transmits both audio and video digital signals. HDMI is similar to DVI except the connector does not lock in place. HDMI is able to carry an uncompressed A/V signal up to 15 feet. There are different categories of HDMI with the newest one (HDMI 2.1) capable of reaching 10K resolution. In general, HDMI can produce resolutions of FHD (1920×1080) and above or below. It is one of the most versatile cables currently available with the only downside being its lack of long cable runs and added cost to the manufacturer's royalties.

what is a monitor's Hue?

Hue is just another word for color; each position around the color wheel represents a different hue. For monitors, you can

adjust the overall picture's hue to give a look that is closer to the desired hue.

what is a monitor's Humidity rating?

The humidity specification on the LCD monitor data sheets relate to relative humidity (RH) and is shown as a percentage. Relative Humidity measures water vapor, but relative to the temperature of the air. It measures the amount of actual water vapor in the air compared to the total amount of vapor that can occur at the current temperature. The same absolute humidity level but in two different climates will result in two different relative humidities. The relative humidity would be higher in the cooler climate, and lower in the warmer climate. The higher the percentage, the more humid it is relative to the temperature in the environment. At 100% relative humidity, the air is saturated and is at its dew point.

what is Hz (Hertz)?

Hertz (Hz) is the unit used to measure the refresh rate of a monitor. The refresh rate refers to the number of times a monitor can show a static image per second. This is similar to frame rate, but slightly different. Frame rate refers to the content itself, refresh rate refers to the display. Too low of a refresh rate on a monitor with high frame rate content will result in excessive motion blur.

what is Input Signal?

The input signal is the signal that comes 'into' a device from another source. For example, if a computer is connected to a monitor, the signal coming from the computer to the monitor is the monitor's input. Inputs on a device determine which signals can be interpreted and brought into the device.

what is Interlaced Scanning?

Interlaced is a method of scanning video. Video sources that have the letter i in them are interlaced (e.g. 1080i). This method of scans the even and odd numbered lines as two separate fields. First the even scan lines are drawn, then the odd scan lines. One each of complete even and odd scan line fields make up one video frame. Interlaced video will double the perceived frame rate of a display without consuming extra bandwidth. However, interlacing effects like combing can occur if the interlaced video is displayed using a slower speed than it was captured, or in still frames.

what is IP?

The Ingress Protection Code (IP) is an internationally accepted standard that classifies and rates the degree of protection provided by enclosures against intrusion, dust, accidental contact, and water. This rating provides a standardized metric to compare different products' performance with each other. The first number refers to protection against solids, the second number refers to protection against liquids. If there is an X in the rating, it means testing was not performed for that specific protection. For a more detailed description on IP Ratings follow the link.

what is an IR (Infrared) Touch Screen?

IR (Infrared) touch screen monitors do not overlay the display with an additional screen or screen sandwich. Instead, infrared monitors use IR emitters and receivers to create an invisible grid of light beams across the screen. This ensures the best possible image quality. When an object interrupts the invisible infrared light beam, the sensors are able to locate the touch point, and send the X and Y coordinates to the controller. IR touch screens generally feature larger screen sizes.

what is Isotropic Failure?

Isotropic Failure results when direct sunlight and high ambient temperatures combine to overheat the LCD screen. The screen will darken, or turn completely black. If the monitor's internal temperature approaches 100°C (212°F) temperatures, the LCD panel will suffer irreparable harm. Please note that a monitor's internal temperature may far exceed ambient

temperatures when positioned in direct, bright sunlight. Therefore, the rated operating temperature of the LCD panel and the overall monitor must be sufficient to survive the worst-case heat scenarios that the monitor will be exposed to.

what is an LCD Panel?

LCD stands for Liquid Crystal Display. The LCD panel directs the light from the backlight and produces the picture we see on the monitor's screen. LCD panels use tiny liquid crystals to shift the light from one color to the next. The crystals are controlled using voltage from the monitor. Different LCD panels offer different advantages and can vary the overall cost of the monitor greatly.

what are LED Backlights?

LED Backlights are the most common backlights used in LCD flat panel displays today. The LED backlights are what illuminates the LCD panel. Without any backlights, an image could not be seen. A monitor's life is based on the life of the backlights because they are so essential. LED backlights succeeded CCFL backlights and are more energy efficient, offer better contrast and brightness, and greater color range. LED backlights must be used with LCD panels to display an image.

what is a monitor's Luminance?

Luminance (AKA Brightness) is the measurement of how much light a monitor emits. The SI unit for luminance is Candela per Square Meter (Cd/m^2). One Cd/m^2 is equal to one "nit," a more common term with LCD monitors. The measure of nits a LCD display emits will be the main factor in determining the monitor's perceived brightness. A monitor luminance of around 250-350 nits will work well indoors and most monitors fall in this range. 400-700 nits would be ideal for daylight use (Daylight Viewable monitors). 1,000 nits or more is required for viewing in direct, bright sunlight (Sunlight Readable monitors)

what are monitor Mounting holes?

Virtually all TRU-Vu monitors feature VESA mount holes on the rear of the monitor. VESA is an industry-standard hole pattern compatible with nearly any mounting solution on the market. The hole patterns are measured in millimeters, from center-to-center, for each of the 4 holes, in a square or rectangular pattern, such as 75 x 75mm, 100 x 100, 200 x 100, etc.

what is MTBF?

MTBF stands for Mean Time Between Failure. A monitor's MTBF refers to the time period when the the monitor's backlights will dim to 50% of the original brightness. MTBF is typically measured in hours. If the backlights of an LCD monitor with standard brightness levels dim to 50%, it is considered unusable because the screen is not bright enough for any use.

However, with Sunlight Readable monitors, things are different. If a Sunlight Readable monitor, which features at least 1,000 nits of brightness, dims down to 50% brightness, the monitor still has 500 nits of brightness. 500 nits of brightness is still twice the brightness of standard indoor monitors. Therefore, the Sunlight Readable monitor can be repurposed for use in other applications where it will not be subjected to direct sunlight.

Consumer-grade monitors typically have an MTBF of 10,000 to 25,000 hours. Industrial-grade monitors typically have an MTBF of 50,000 hours.

what is Multi-touch?

Multi-touch refers to the ability for a touchscreen to interpret multiple touch points being triggered at the same time. Common multi-touch actions include zooming in by performing a pinch-like maneuver, or pressing two buttons at the same time. Multi-touch is the overarching term that refers to any touchscreen action that accepts more than one touch point being

triggered. This is common with P-Cap and some IP touch screens.

what is an MVA Panel?

The MVA panel is a type of LCD panel. MVA panels are newer than TN panels and offer wider viewing angles (typically 178° x 178°) This allows the monitor to be used in landscape or portrait mode, or mounted above eye level, with no loss of image quality.

what is NEMA?

The National Electrical Manufacturers Association (NEMA) defines standards used in North America for various grades of enclosures used in industrial applications. Each enclosure is rated to protect against personal access to hazardous parts and environmental conditions. The X in NEMA ratings indicates additional corrosion protection. For a more detailed description, see NEMA ratings.

what are Nits?

Nits is the measurement of luminance. Nit is believed to come from the Latin word nitere, to shine. It is the measure of light emitter in a unit area and frequently used to specify the brightness of a display. Standard displays feature 200-300 nits, whereas Sunlight Readable Monitors range from 1,000 – 2,500 nits.

what is NTSC?

NTSC and PAL are analog video standards used across the world to transmit video content. For North America and most of South America, the standard is NTSC. For the rest of the world, the standard is PAL. SECAM is a far less widely implemented standard that was first used in France, but is now transitioning to DVB.

NTSC stands for the National Television System Committee. It is the analog video standard used in North America and most of South America. This standard will transmit 30 frames each second at 60Hz with each frame being made up of 525 individual scan lines. The digital standard to succeed NTSC is ATSC which stands for Advanced Television System Committee standards.

what is an Open Frame monitor?

Open frame monitors are provided without typical enclosures. They are often used for limited-space applications, or when the display will be integrated into a machine or system. Open frame monitors and touch screens are available in two configurations: all components are mounted to the rear of the LC panel, or in a “kit” version, the LCD panel and all other components are provided loose, enabling the end user to mount them in any way they desire.

what is a monitor’s Operating Temperature?

The operating temperature of the LCD video display is the range of temperature that is deemed acceptable for using the monitor. Operating outside the high end of this range can result in isotropic failure, or the components can begin to fail at temperatures below the low end of the range. The storage temperature of a monitor will always be equal to or greater than the operating temperature since monitors generate heat when operated.

what is Optical Bonding?

Adding glass over a LCD panel does protect it. However, this also causes increased internal reflections, both from external light as well as from the LCD’s own backlights, thereby reducing image quality. It also creates an air gap between the glass and the panel.

Optical Bonding is the process of injecting an optical-grade resin into the gap between the LCD panel and the glass. This eliminates internal reflections, eliminates the possibility of internal condensation, increases the contrast ratio, and improves the image quality.

what is a monitor's Orientation?

Landscape orientated monitors are long like a sprawling landscape — they stretch left to right. Landscape oriented monitors are the most common for viewing since it is the industry standard for almost all media, from film to broadcast TV.

Portrait oriented monitors are taller than they are wide. Portrait orientation is ideal for digital signage, way finding, and mobile devices.

It is important to know your end goal with orientation. For example, sunlight readable monitors have polarization filters specified to the monitor's native orientation. If you flip the orientation of the signal, you may also need to flip the polarizing filters if being viewed by someone wearing polarized sunglasses.

Viewing angles are another important factor to consider when turning a monitor 90° into portrait orientation. If the top and bottom viewing angles of your monitor are not identical, and are less than 178°, then one side of the screen will have a different viewing angle than the other side when flipped into portrait orientation.

what is a monitor's Output Signal?

The output signal is the signal that is transmitted 'out' of a source. For example, if you have a computer connected to a monitor, whatever signal is coming 'out' of your computer into the monitor is the output. Outputs on a device determine which signals can be transmitted and sent out of the device. Make sure the output matches the input on the receiving device.

what is Overscan?

Overscan is when part of the video signal is outside the visible bounds of the screen. This occurs when the input video signal has a larger resolution than the monitor's maximum resolution. Thankfully, this is not much of an issue any more with added standards (title and action safe) and expanded compatibility with signals and monitors. CRTs from the 1930s to the early 2000s were highly variable when it came to how the image was positioned within the border of the screen, resulting in overscan issues.

what is PAL?

PAL stands for Phase Alternating Lines. PAL is the analog video standard for the rest of the world.PAL standard will transmit 25 frames each second at 50Hz with each frame being made up of 625 individual scan lines. The digital standards to succeed PAL are DVB, ISDB, or DTMB.

what is a Panel Mount monitor?

Panel mount is a type of enclosure which enables you to flush-mount the monitor or touch screen into a panel, door or enclosure. Panel mount enclosures feature an oversized front bezel to enable mounting. The front face will protrude very slightly from the mounting surface, but the internal components will be safely enclosed inside the panel, door or enclosure. Panel mount enclosures offer added protection since only the front of the monitor is exposed.

what is Pinch-To-Zoom?

Pinch-to-Zoom is a common multi-touch gesture used on many touchscreens, especially cell phones. This is when you use

two fingers in a pinching motion to zoom in or out on a touchscreen. P-Cap (Projected Capacitive) touch screens enable this multi-touch capability.

what is a Pixel?

Sometimes referred to as a “dot,” as in “dots per inch”, “Pixel” is short for picture elements, which make up an image, similar to grains in a photograph or dots in a half-tone. Each pixel can represent a number of different shades or colors, depending on how much storage space is allocated for it. Pixels per inch (ppi) are sometimes the preferred term, as it more accurately describes the digital image. The actual physical size of the pixel is equal to the pixel pitch of the display. If your display is set to something less than the maximum resolution, then a pixel will be larger than the actual size of the screen dot, i.e., a pixel will use more than one dot.

what is Pixel Jitter?

In order to convert analog video signal to digital, a decoder is needed. You would want to do this if you are using an analog video system (like in security applications) but want to use digital equipment to monitor it. Pixel Jitter refers to any timing differences between the analog video capture device and the video decoder’s internal clocks. In perfect form, a decoder will digitize pixels at the same rate the pixels are acquired by the camera. Any difference between these two times will result in “pixel jitter” which looks like shaking/noise coming from the video signal.

what is Pixel Pitch?

Pixel pitch (AKA Dot Pitch) is the distance from one pixel’s center to the adjacent pixel’s center. Pixel pitch is measured in millimeters (mm) and most LCD monitors range from 0.10mm to 0.70mm. Pixel pitch is directly correlated to resolution and viewing distance. The smaller the pixel pitch, the more condensed the pixels are, and the higher the resolution. However, a smaller pixel pitch requires a closer viewing distance. The viewing distance should decide the ideal pixel pitch for you.

what is a Polarizer?

Polarizing filters are made from a type of transparent crystal, which allow certain light waves to pass through. A vertical allows vertical light waves, and blocks horizontal light waves, and vice versa. LCD monitors use two polarizers to control the brightness of the light. Care must be taken to choose the proper polarizers. For example, Incorrect polarizers used in Sunlight Readable monitors would result in the monitors appearing invisible to anyone wearing polarized sunglasses.

what is Powder Coated Steel?

Powder coated steel is one of the most common materials used to build rugged equipment such as industrial-grade monitors, so long as the monitor will not be subjected to contact with liquids. The coating is applied electrostatically and then cured under heat. It provides a harder, tougher finish than conventional paint.

what is Power Consumption?

The power consumption is how much wattage the monitor will consume. This concerns the circuit the monitor is plugged into. To avoid a blown circuit, ensure that your circuit allows for the added wattage the monitor will consume. (Watts divided by Volts = Amps and Watts divided by Amps = Volts)

what are monitor’s Power Requirement?

The power requirement of a monitor is the amount of voltage needed to turn on and operate the monitor. Common power requirements include 12VDC, 12-24VDC, 36VDC, 120VAC or 220VAC.

what is a monitor's Power Supply?

Monitors have either internal or external power supplies. Monitors with internal power supplies have a AC power cord which plugs into a wall outlet. The incoming 120VAC power is then converted down to 12 or 24VDC inside the monitor. External power supplies are generally small, black rectangular devices which converts AC power to DC. They have two cords; one plugs into a wall outlet, and the other cord carries 12 or 24VDC to the monitor.

what is Private Label (White Label)?

Private labelling is when one company manufactures a product that will be sold under another company's brand. TRU-Vu private labels a great number of monitors and touch screens, featuring the client's name, model number and logo on the front bezel and rear label.

what is Progressive Scan?

Progressive is a method of scanning video. Video sources that have the letter p in them are progressively scanned (e.g. 1080p). Progressive scanning scans both the even and odd lines of video (the entire video frame) at the same time. While progressive does not halve the bandwidth or double the perceived frame rate like interlaced scanning, less motion blur will occur since everything is scanned at the same time. Broadcast companies like ESPN have sacrificed resolution in the past to transmit at 720p instead of 1080i simply to make use of the benefits of progressive scanning's enhanced motion capture.

what is a Projected Capacitive (PCAP) Touch Screen?

Projected Capacitive is similar to Surface Capacitive, but it offers two primary advantages: in addition to a bare finger, it can also be activated with surgical gloves or thin cotton gloves; and it enables multi-touch activation (simultaneous inputs from two or more fingers).
A projected capacitive is composed of a sheet of glass with embedded transparent electrode films and an IC chip, which creates a three dimensional electrostatic field. When a finger comes into contact with the screen, the ratios of the electrical currents change and the computer is able to detect the touch points. Since the finger sensing is projected through the glass, this allows the use of a thin gloved finger or passive stylus.

What is Protective Glass on a monitor?

Protective glass is when an extra layer of glass is added onto the front of the LCD screen. The primary reason to place glass over the LCD panel is to protect the panel from damaged. AR (Anti-Reflective) or AG (Anti-Glare) glass will help to reduce unwanted reflections and glare.

what is a Rack Mount monitor?

Rack mount is a type of enclosure that features flanges on the left and right sides suitable for mounting directly into a standard 19" rack with the face of the LCD monitor visible at all times. The height of the unit is measured in rack units (RU) where 8U and 9U are most common to fit 17-inch or 19-inch LCDs.

what is an RCA Connector?

RCA (Radio Corporation of America, which introduced the design) is used to carry composite video or stereo audio over a coaxial cable. Unlike the BNC connector, RCA does not lock into place and is split between 3 separate cables: yellow for video, red and white for audio.

what is Refresh Rate?

The refresh rate refers to the number of times a monitor can show a static image per second. Hertz (Hz) is the unit used to

measure the refresh rate of a monitor. This is similar to frame rate. Frame rate refers to the content itself, whereas refresh rate refers to the display showing the content. Too low of a refresh rate on a monitor with high frame rate content will result in excessive motion blur. Almost all monitors built for use in North America feature a 60Hz refresh rate. However some gaming monitors can feature refresh rates of 144Hz or higher.

what is Response Time?

Response time is how quickly the monitor will react to a signal. Response time is measured in milliseconds (ms) and most monitors today have response times of 10 ms and lower. A smaller response time is better than larger because it means the monitor responds quicker. Too long of a response time will result in streaks or "ghosts" from fast moving objects.

what is a monitor's Resolution?

The display resolution of a LCD monitor is the number of horizontal pixels multiplied by the number of vertical pixels. TRU-Vu's display resolutions range from 640 x 480 up to 3840 x 2160 (aka 4K resolution). Larger display sizes will typically require higher resolutions that provide sharp image quality. However, LCD displays with smaller screen sizes can have lower pixel resolutions but still produce excellent image quality.

What is RGB?

RGB stands for Red Green Blue. It is the color model used in sensing, representing, and displaying images in electronic systems like monitors and computers. RGB is an additive color model that adds the 3 primary colors (red, green, and blue) together to reproduce a an array of colors. Red, green, and blue together will result in white. LCD monitors will use RGB sub-pixels to create different colored pixels in order to represent a larger picture.

what is S-Video?

S-Video stands for Separate Video and carries a video-only analog signal. S-Video has a 4-pin mini Din connector and while it can convert to VGA, it is expensive to do so. The 4 pins carry color, black, and white video signals all in one cable connection. Two major advantages to S-Video is no dot crawl or rainbow effect.

what is a monitor's Saturation?

Saturation in monitors or colors refers to the intensity of a color. Lower saturation will feature washed out colors with less pigment. Higher saturation will feature bright colors that are intensely colored.

what is a SAW Touch Screen?

SAW (Surface Acoustic Wave) is a touch screen technology. SAW touch screens utilize a series of piezoelectric transducers and receivers along the sides of the monitor's glass plate to create an invisible grid of ultrasonic waves on the surface. When the panel is touched, a portion of the wave is absorbed. This allows the receiving transducer to locate the touch point and send this data to the computer. SAW monitors can be activated by a finger, gloved hand, or soft-tip stylus.

SAW touch screens provide excellent image quality. However, contaminants on the surface can interfere with the touch sensing grid, so cleanliness is important. You also must use a soft object to trigger this device so ultrasonic waves can be absorbed. Hard objects such as a pen, credit card, or fingernail will not work well.

what is Serial/RS232?

The serial port is a serial communication interface where information is transferred in or out sequentially one bit at a time. The term serial port usually identifies hardware compliant to the RS-232 standard or similar. RS-232 is another common connection used to transmit data. For monitors, RS-232 can be used to power a touchscreen and communicate recorded

touches to a connected computer.

what is a monitor's Screen Size?

The screen size of an LCD monitor is determined by measuring from one corner of the LCD screen (excluding the bezel) diagonally to the opposite corner of the LCD screen. Screen size is measured in inches. Screen size is not to be confused with Viewable Area, as the viewable area is the horizontal measurement multiplied by the vertical measurement of the LCD Screen.

what is SDI?

SDI stands for Serial Digital Interface; it carries both audio and video digital signals. The SDI commonly used today is 3G-SDI and HD-SDI. These both feature locking BNC connectors as well as a resolutions of 1920 x 1080. HD-SDI is only able to do 1080i whereas the newer 3G-SDI is able to do 1080p60. SDI is a great "bridge" from source to end destination since it can be run up to 330 feet with an HD bitrate.

what is Shock?

The shock rating shows the maximum amount of shock that can occur without damaging the display. The shock rating of a monitor is measured by the maximum acceleration of gravity (G) over a given time, usually milliseconds (msec). A monitor experiencing a shock greater than the provided rating or if the shock occurs quicker than the given time will result in complications or failure.

what is Sleep Mode?

When the monitor stops receiving a video signal (a horizontal of vertical sync signal) for "x" seconds, it goes into Sleep Mode. The LED backlights and the video circuitry are turned off. Power consumption drops from its standard rate (depending on the model) down to less than 5W. This reduces heat and conserves energy. When the incoming video signal is resumed, the monitor exits Sleep Mode and begins projecting the video images on the screen.

what is Stainless Steel?

Stainless steel is a corrosion-resistant material that is commonly used to build equipment that will be exposed to liquids. Compared to other corrosion-resistant materials such as aluminum, stainless steel is typically heavier, and is susceptible to finger print markings, but does offer more protection. Stainless steel can be painted but it requires many more steps to prepare the surface.

what is a Sunlight Readable/High Brightness/Daylight Readable monitor?

Sunlight Readable monitors are able to show content in indirect or direct sunlight without loss in image quality thanks to a higher brightness. Monitor brightness is measured in nits. Typical indoor monitors range from 200-300 nits. Indirect Sunlight or Daylight Readable monitors feature 400-700 nits. Direct Sunlight Readable monitors feature 1,000-2,500 nits. This much higher brightness is what allows Sunlight Readable monitors to be viewed in sunlight.

High brightness models can be used in both digital signage and retail since higher brightness monitors have been shown to improve patron happiness.

what is a Surface Capacitive Touch Screen?

Surface capacitive touch screen monitors have a transparent electrode layer placed on top of a glass panel, and covered by a protective cover. When an exposed finger touches the monitor screen, it reacts to the static electrical capacity of the human body; some of the electrical charge transfers from the screen to the user. This decrease in capacitance is detected

by sensors located at the four corners of the screen, allowing the controller to determine the exact touch point. Surface capacitive touch screens can only be activated by the touch of human skin or a stylus holding an electrical charge. It will not activate with a gloved finger, or other objects.

what is SVGA?

Super Video Graphics Array (SVGA) is a set of video standards one step above VGA. SVGA can display up to 16 million colors with a resolution of 800 x 600 compared to VGA's maximum of 640 x 480.

what is a TN Panel?

The TN panel is a type of LCD panel; TN stands for twisted nematic and is one of the most widely used, cost effective, but oldest LCD panels available. The viewing angles are not as good as other types of panels, and are generally worn when viewing the monitor from below. However, the response time is one of the quickest out of all LCD panels.

what is a Touch Interface?

In order to use a touch technology, there must be an interface to power the touch technology as well as translate your touches to the computer. The touch interface enables the touch panel to communicate with your computer. This interface will typically be a USB or RS-232 cable.

what is Touchscreen Technology?

There are multiple types of touch screen technologies. The five most common touch screen technologies are 5-Wire Resistive, Surface Capacitive, Projected Capacitive (P-Cap), Surface Acoustic Wave (SAW) and infrared (IR), each having its own advantages and disadvantages. For example, some are designed and built to be used in almost any condition. However, the same technologies may reduce the brightness and overall image quality. We also offer TRU-Touch Technology.

Other technologies allow for multitouch functions such as pinch-to-zoom, but cannot work with operators wearing thick gloves. The type of touch screen technology you select will be contingent upon many factors, including type of data to be displayed (video, graphics, text), the intended users, the operating environment and where/how it will be mounted. Chosen correctly, touch screen monitors will be an excellent addition to your system. Please see our touch screen guide for further details.

what is a Touchscreen Driver?

A Touchscreen Driver is the file that is installed on a computer to translate what a touch screen is seeing to the computer. It is like a digital manual that allows the computer to understand what the touchscreen is feeling and wanting to trigger. When installing a new touchscreen driver, make sure any old drivers for that touchscreen are deleted. Multiple drivers pertaining to the same touch screen on the same computer will confuse the computer and result in the updated driver not working properly.

what is *TRU-Tuff* treatment?

TRU-Tuff is a unique treatment to maximize shock and vibration resistance. This process includes: RTV silicone on all critical components and connections; all wires are dressed, tie-wrapped and secured; and ThreadLock is applied to all screws.

what is a Tuner?

A tuner in an LCD is a component that receives television signals from an antenna or cable and converts them into a viewable picture and sound.

what is USB?

USB stands for Universal Serial Bus. It is one of the most common industry standard data connections used today. USB cables allow communication and power supply between computers, peripherals, and other computers. For monitors, USB can be used to power a touchscreen and communicate recorded touches to a connected computer.

what is VESA (Mount)?

The Video Electronics Standards Association (VESA) is a technical standards organization that has created many computer display standards. Its most prominent standard today is the VESA Mounting Interface Standard (MIS) or simply the VESA Mount. VESA Mounts simplify mounting by standardizing the hole pattern that a monitor and mount must fit. VESA mount patterns are measured in millimeters and listed as the horizontal by vertical distance between the center of the mount holes. An example would be “VESA 75×75” meaning the 4 screw holes are all 75mm apart.

what is VGA?

VGA stands for Video Graphics Array; it carries only a video signal, no audio. VGA is a locking, analog connector and is one of the more common outputs on most older computer systems. The maximum resolution is UXGA (1600×1200) but VGA cables can go up to 100 ft. with only 800×600 resolution.

what is Vibration?

The vibration rating is the total amount of vibration a monitor can sustain. The vibration is measured using the acceleration of gravity (G) over time. Experiencing a higher vibration or a vibration that lasts longer than the provided time will result in complications or failure.

what is a Video Cable Adapter?

Video cable adapters are used when you need to adapt one connector to another with the same type of video signal. These can change the gender of a connector or the connector entirely. Adapters only work when going from an analog converter to another analog converter, or to digital to digital. It cannot adapt analog to digital or vice versa; a video cable converter is required for that conversion.

what is a Video Cable Converter?

Video cable converters are used when you need to change a signal from analog to digital, or vice versa. The analog electronic device’s input voltage or current is converted to a digital number representing the magnitude of the voltage or current.

what are Video Inputs?

The video inputs on a monitor show what incoming video signals the monitor can interpret. This also tells you what cables are needed to send the signal from your source to the monitor. Common video inputs include: HDMI, VGA, DisplayPort, Composite BNC, DVI, and HD-SDI. Some transmit audio and video, others only transmit video.

what is a monitor’s Viewable Area?

The viewable area of a video display is the actual width of the LCD screen (typically in inches) x by the height of the LCD screen in inches (excluding the enclosure). This measures the total area of the screen and shows how wide and tall the screen will be. Monitors with the same Screen Size will have the same Viewable Area and visa versa.

what is a monitor's Viewing Angle?

The viewing angle of a monitor is the maximum angle the monitor can be viewed at before image quality degrades. Viewing angles are measured in horizontal and vertical degrees. When the monitor is in a position where viewing occurs outside of this maximum angle, the brightness and contrast ratio will begin to drop. At a severe enough angle, the perceived colors on screen will begin to shift. Make sure your monitor's end position will allow viewing within these angles for ideal results. The worst viewing angle for most LCD panels is usually from the bottom looking upward at the panel. A MVA-type panel will provide full 178° x 178° viewing angles.

what is a Warranty?

The warranty offered with a monitor is how long the monitor "shall be free from defects in materials and workmanship from the date of shipment." Some monitors will have longer or shorter warranties depending on the product specifics. Nearly all TRU-Vu Monitors carry a 3-year warranty.

what is Waterproof?

Waterproof means a device is completely sealed from the ingress of water under specified conditions. The waterproofed device will remain unaffected by water. IP ratings and NEMA standards measure waterproofing based on specified conditions. We have a full line of waterproof monitors and touch screens.

what is a monitor's Weight?

The weight of a monitor is the total of the monitor's components and enclosure. This does not include cables or mounts. The weight is typically recorded in pounds (lbs. or #) or kilograms (kg).

what is Zero Bezel / Bezel-Less?

Zero Bezel or Bezel-Less enclosures are monitors which have no bezel, frame, or edge around the front edges. If you run your finger across the monitor's front face, you would never feel a bump on the edges. Zero Bezel or Bezel-Less monitors are more stylish and hygienic. They are far superior medical displays, as the bezels found on standard LCD monitors often able germs and debris to collect near and under the bezel.

Get the Right LCD Monitor for Your Needs. Talk With Our Experts Call (847) 259-2344.