To successfully deploy LCD displays in outdoor environments, many factors must be considered

Weather Factors:

Direct Sunlight

Absorption of sunlight causes the molecules of the object or surface strike to vibrate faster, increasing its temperature. The direct sunlight causes the temperature of the materials surface rising quickly and much higher than air temperature of the surrounding, exceeding the operating temperature of the LCD display. Install a shad over the LCD display can prevent some damages caused by direct sunlight.

UV Light

Beside extreme temperature, another concern that is often not understood or just not known about at all is sunlight damage. Liquid crystal displays use organic components that are susceptible to UV (<400 nm) and IR (>750 nm). These bandwidths of radiation have an observable impact on the organic components in LCDs. Extended exposure has been known to cause a color shift and a washed out look to images displayed with the LCD. Over time the UV and IR radiation degrade the organic components causing them to fail to function properly. The amount of time it takes can vary depending on brand and model as well as specific weather conditions the display has been exposed to. For instance some atmospheric disturbances can reduce the amount of Ultraviolet that is transmitted to the display.
In any case it is important to protect your display from the elements, especially if it is going to be exposed to harsh environments not intended by the manufacturer. One way to do this would be to utilize a Hot Mirror with a UV blocker. This will significantly reduce the amount of IR radiation between 750 nm and 1200 nm, as well as the UV radiation below 400 nm. If the LCD is going to be used outdoors for extended periods then an extended hot mirror may be necessary, which extends the bandwidth protection out to 1600 nm and will help reduce some of the longer wavelength IR damage. Another concern with liquid crystal displays are their susceptibility to overheating due to excess IR radiation. The LCD is intended to operate within a certain range of temperatures according to the manufacturer's instructions and outdoor use can lead to higher than normal temperatures. The display being exposed to excessive heat can cause the crystal to become isotropic and fail to perform properly. A hot mirror can help alleviate these concerns as well by reducing the amount of infrared radiation that heats the display. Long-term outdoor exposure to direct UV may cause yellowing or cracking to resistive touch panels' surface hard coat. The hazing and yellowing caused by direct sunlight exposure affects appearance and visibility while bubbling and cracking will adversely impact operation.

Temperature

In the summer, the enclosure of LCD display has to be able to dissipate the heat generated from various heat sources and keep the ambient temperature within operating temperature limits. In the winter, a heater may be required to keep the ambient temperature above low limit operating temperature.

Moisture, Rain, Snow

Waterproof enclosure is required to prevent the moisture, rain and snow penetrating.

Visibility Factors:

Brightness

Typically, outdoor sunlight-readable displays require a high-power backlight to provide 1000+ nits brightness in order to overcome the sun. A standard LCD brightness is in the range of 250~500 nits, hence the readability under the sunlight is poor. The enhancement of LCD brightness will increase the power consumption and generates much more heat. Proper Heat dissipation and enough power supplies needs to be considered when enhanced brightness LCD is deployed.

Anti-Reflection

An Anti-reflection overlay can help to improve the readability without enhancing the backlight of LCD.

Anti-Glary

Waterproof enclosure is required to prevent the moisture, rain and snow penetrating.

Vandalism Factors

The outdoor LCD display can be easily damaged in many ways, especially with touch screen.