Transflective LCD Monitors

What Is Transflective Technology?

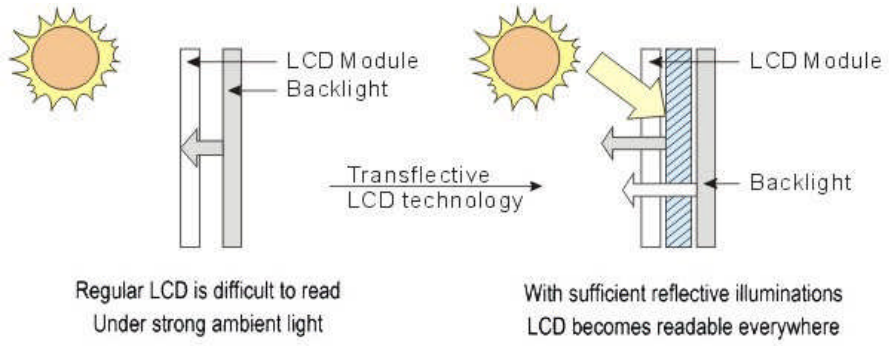
Transflective LCD technology can be applied to certain selected TFT LCD's where it's specification will enable the transflective design to work effectively. With the fitted reflective functionality, the modified LCD can reflect the ambient light passing the LCD cell and utilize the reflected light beams for its improved illumination. The stronger the ambient light is, the brighter the LCD will appear. As a result, the modified LCD is viewable under lighting conditions including direct sunlight. The advantages of transflective LCD technology are as the comparison table below:

Technology	Temp.from Standard Panel	Mechanical Change	Inverter	Sunlight Readable
Lamp modify(Higher brightness solution)	Heating issue	thickness	Need to Change to higher current inverter	Yes
Transflective	No change	No change	No change	Yes
Contrast enhance	No change	No change	No change	N/A*

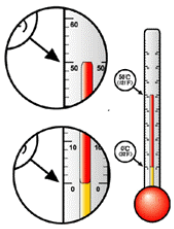
How Does this Technology Work?

Transflective LCD modules hold both transmissive and reflective properties, and the method of image display depends upon the conditions of the ambient environment. The display uses a backlight with a transmissive property in dark environments, and uses external light with a reflective property in brighter environments. This improved transflective method allows for better colour performance over a wider ambient lighting range thus making it similar to similar to standard transmissive modes. The net reflectance rate of our Transflective LCD's are from 0.9% to 1.3% dependent upon the TFT LCD selected. For example, with a 1.3% net reflectance rate and under 10,000 ambient sunlight conditions, the brightness gain is around 130 nits added to original backlight brightness.

Technology/Function Diagrams



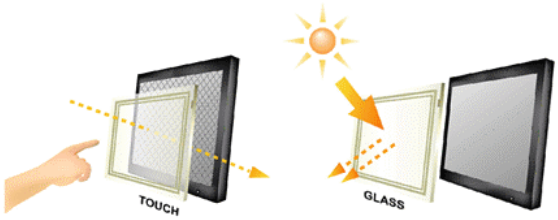
Handling Issues



Although transflective LCD technology is mainly used in outdoor applications and can increase the effective imaging under sunlight, it is suggested that users should keep the LCD within a temperature range of 0-50C in operation and storage.

Contrast Ratio to Ambient Light

Contrast ratio is a critical factor that can influence the readability of transflective LCD monitors. For example, if you put a LCD in a very high ambient light environment; the brightness of display is also very high; the contrast between the ambient light and the display image is too low. Therefore, the user may not be able to see a clear LCD screen image. In order to be sunlight readable, the contrast ratio to the ambient light needs to be in pre-determined range.



SAW/IR Touchscreen or Low Reflectance Glass

If your demand is for built-in protection glass, a material whose reflectance rate is less than 1% should be used. Generally, the reflectance rate of protected glass can be as high as 4-6%, but we can provide reflectance ratio glass which is less than 0.6% enabling the sunlight readability performance to work effectively.
For touchscreen applications Surface Acoustic Wave (SAW) or Infrared (IR) touchscreens should be used as these use low reflectance glass and do not reduce the amount of light entering the monitor which other touchscreen technologies are liable to. SAW/IR touchscreens therefore do not impact on the transflective properties of the monitor.

Benefits of Transflective Monitors

- Readable under all lighting conditions including direct sunlight.
- Enhanced contrast ratio for both indoor and outdoor conditions.
- Utmost indoor colour saturation, brightness, and viewing angles.
- Full mechanical and electrical compliance with existing systems.
- Power saving and backlight life essential for many outdoor applications.
- No extra heat generation even when viewed at higher brightness.

Applications for Transflective Monitors

The market demands for outdoor LCD applications are expanding, such as mobile navigator/video systems, table PC, KIOSK, POS and digital signage systems. Transflective LCD's truly offer the most convenient and affordable solutions for your various outdoor LCD applications.

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