Custom Color LCD Display Module

The newest color technology is called Field Sequential Color (link to http://focuslcd.com/custom-fsc-lcd-displays/ [1]) or FSC LCD display.

TFT Display (left) vs. Custom Color FSC Display (right)

FSC LCD's (www.focuslcd.com [2]) are a uniquely different color technology. They are not a replacement for OLED's or TFT's because they do not display video or high resolution photos.

So, what good are they?

FSC's fit a niche in the growing market of custom build color LCD modules.

Henry Ford meets Burger King -When Henry Ford built his first car, he told his customers they could have any color car they wanted as long as it was black. Car

manufacturers now offer multiple options to their consumers. The customer can choose their paint color, interior color, automatic or manual transmission, even heated seats.

Have it your way.

So why not offer the same option to customers who want color displays? The FSC display does just that.

In the past, OEM designers were restricted to standard size color displays set by the OLED or TFT manufacturer. FSC technology removes this constraint and at a surprisingly low cost.

FSC color displays take the single color offered by static/segmented display and add seven additional colors. The attached Youtube ink shows a video of the display as it changes colors.(http://www.youtube.com/watch?v=ukjAre1QG1s [3])

Customers choose which icons they want on their display, the dimensions of the glass, and receive a customized solution.

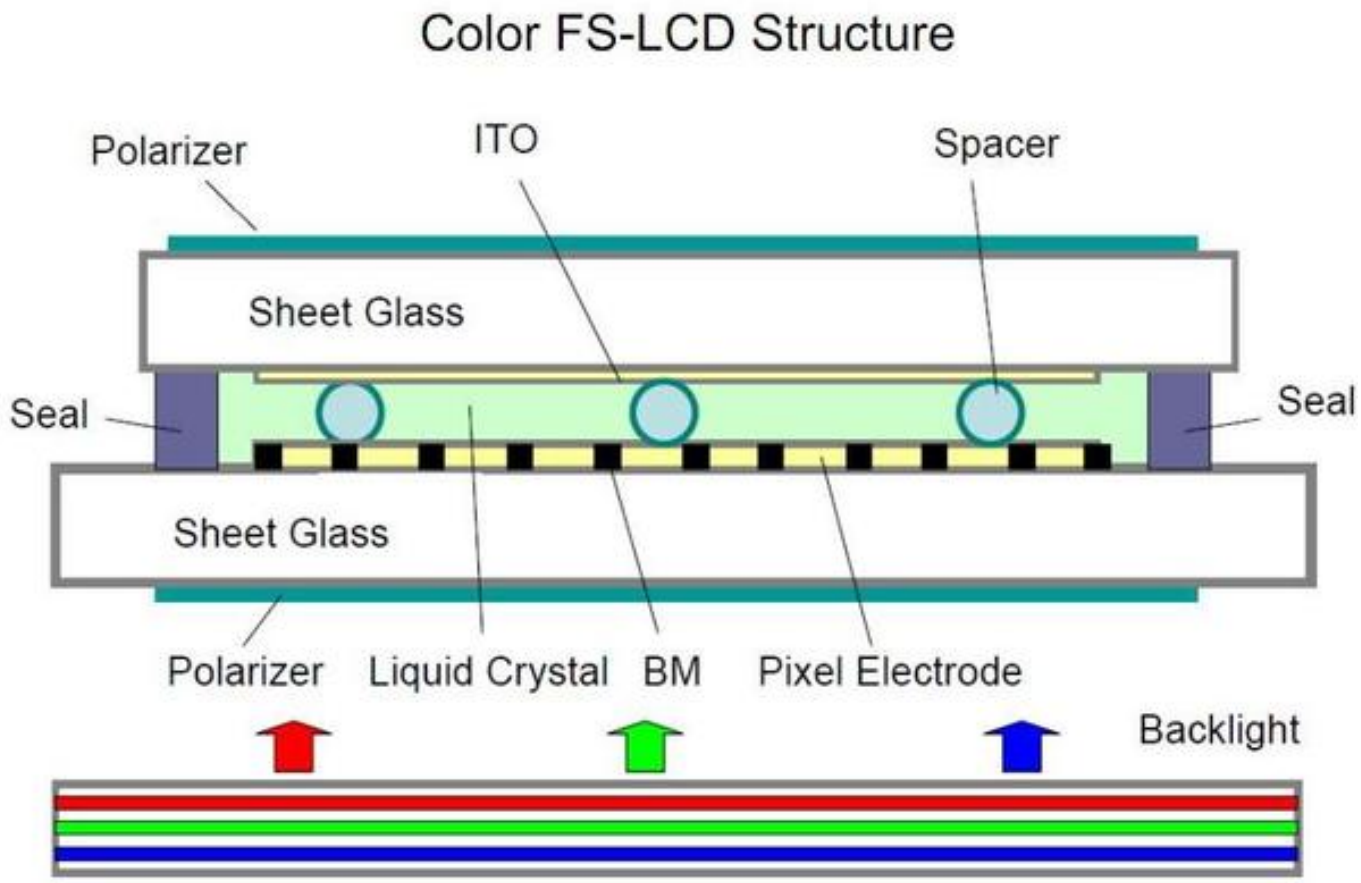
How does this new technology work?

FSC LCD Displays implement an RGB backlight (http://focuslcd.com/wp-content/uploads/2011/06/FSC_Technology1.pdf [4]) to display brilliant bright colors. The colors are brighter then other displays because there is no filter.

The lack of filter allows a darker black positive mode (dark letters on a light background) and a brighter white negative mode (light colored letters on a dark background)..

Each segment can display any of seven different colors. The color change is controlled through the customer's software/firmware.

Below is a cross sectional view of a Color FSC LCD Display.



www.focuslcd.com

Five steps to your own custom color LCD module

1. Create a drawing that includes the size of the glass,the icons and segments you want. The icons and segments can be placed on the drawing to show an approximate location. Here is a link to an online design form to help you quickly design the display. (http://focuslcd.com/custom-lcd-display-design-and-engineering/custom-fsc-display-form/ [5])
2. After you submit your drawing, you will recevie a counter drawing (A cad drawing showing the exact dimensions of the display) within three to five business days.
3. Choose your interface, serial or parallel. The display contains a built in controller driver IC that allows operation in either mode.
4. Choose a mpu for your product. The FSC module does not require a large processor to drive the unit.
5. After you approve the counter drawing and submit the one time tooling fee, you will recevie samples in 5 to 7 weeks.

What is the difference between a FSC color display and a segmet/static display?

- The FSC display provides seven colors plus the background color. The static display only offers one color
- The FSC allows the OEM's software to change the color of each segment. The

static does not have this option..
- FSC includes a controller/driver chip to replace the need for multiple pins or multiplexing. This reduces the number of pins necessary on your mpu.

Advantages of FSC over OLED and TFT include:
- Lower cost
- The display is customized to the size the customer needs.
- Requires a less expensive microprocessor to drive the display.
- Low MOQ (Minimum Order Quantity. This is the number of displays that you would need to purchase at one time.) of 500 displays.

Disadvantages of FSC:
- You are limited to seven colors and not thousands.
- At this time the max size of the display is 7 inches.
- Cannot display video

Color LCD summary:
- If you must have color and need video or very high resolution, then choose TFT or OLED.
- If you need a custom color display and you do not need thousands of different colors then FSC is your best choice.
- If you can do without color and need very lost cost and low power usage, stay tuned for the next article on monochrome (non-color) displays.

Posted by Janine E. Mooney, Editor

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