Dignity Electronics

VA LCD MODULE & BACKGROUND INFORMATION

VA LCDs – Display Background

VA (Vertical Alignment) displays are robust, flexible, low cost and easy to design in, and a viable alternative to TFT-LCDs for a number of applications. VA panels have inherently high contrast and a deep black background, and can be used with a backlight of almost any color.

- Flexible content – characters, text, graphics
- Low cost compared to active displays
- Full viewing angles
- Wide temperature range
- Offer true black background when display is off
- Clear, crisp icons & high contrast
- Add a variety of colors with various LED backlights

Vertical alignment displays can also be custom built to customer specifications and display content at a much lower cost than TFTs or other active displays. They are ideal where only one or two areas of colour are needed, and full-colour TFT- LCD would be excessively expensive or power hungry.

VA LCDs – Working Principle

VA LCDs can deliver excellent performance where a crisp, clear display is required, with high contrast and a deep black background. As with TN-type LCDs, Vertical Alignment displays rely on changing the orientation of liquid crystal molecules to block or permit the passage of light through the display.

When the display is in off-state, the molecules are aligned vertically on specially textured inner surfaces of the two plates of glass. This vertically aligned arrangement prevents light from passing. As a result, the display produces a background that is deep black, enabling VA displays to achieve very high contrast ratios of more than 1000:1, and with sharp, crisp icons and characters.

As with many LCD technologies, a backlight is required as the display works only in the transmissive normally black mode. Almost any backlight color can be used to deliver the required effect, like cool white for easy readability.

VA LCDs – Touch Display Module

Size: As per client requirement
Cover Lens: Glass, PMMA, PC
Interface: SPI, I2C
Customization: Display content, touch effects, backlight color & brightness, etc.

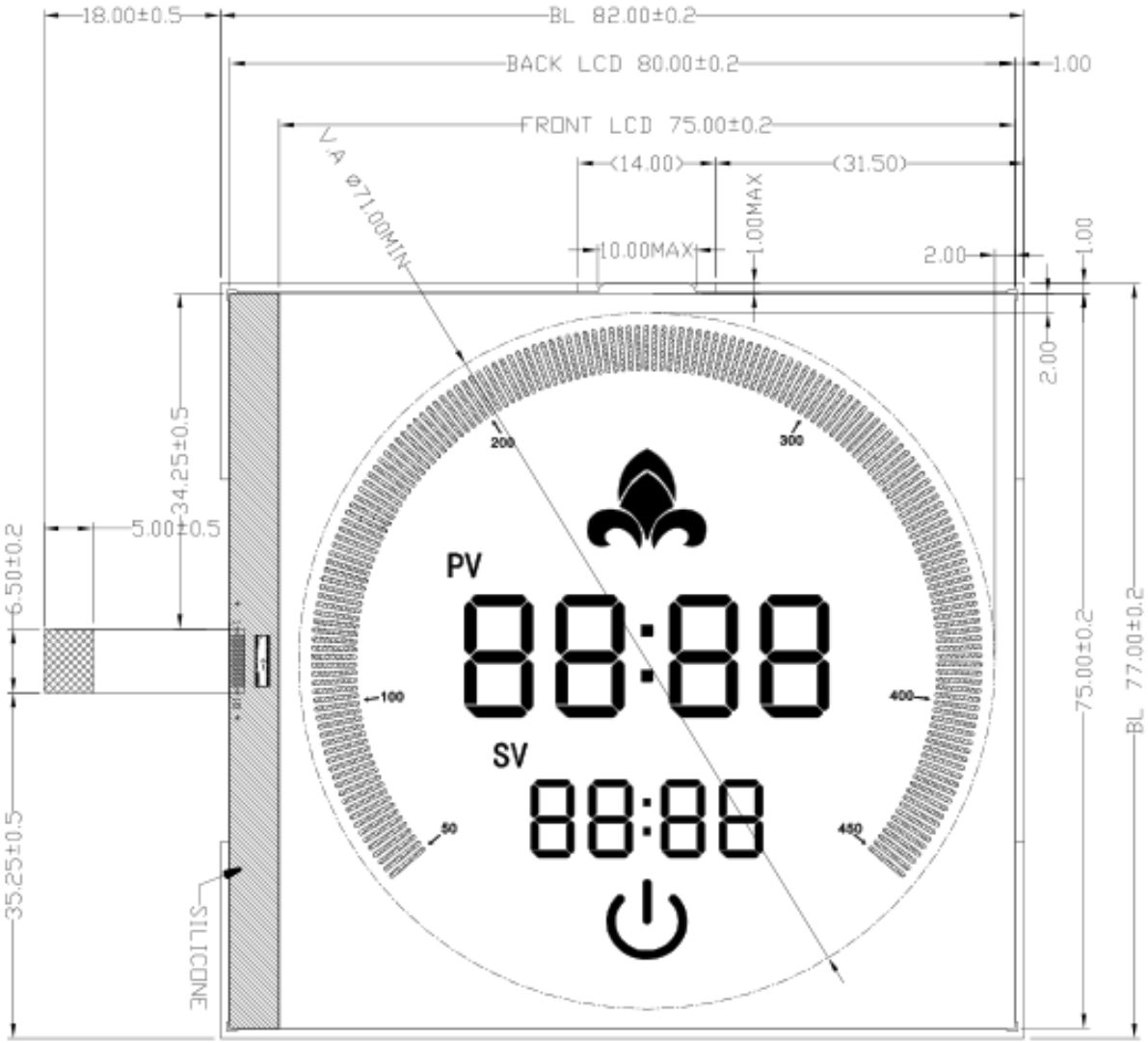
By combining updated VA display technology (better LEDs, more vibrant colors, increased display density, resolution and clarity) with our transparent capacitive touch films, we can provide a cost-competitive, visually distinctive HMI touch-display module for customers in the appliance, industrial, automotive, instrumentation and other industries.

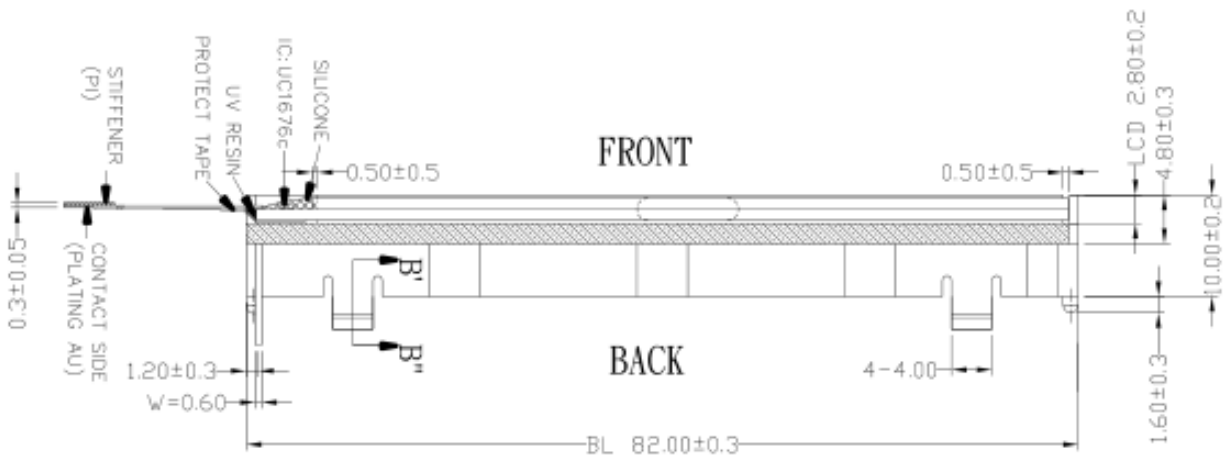
Advantages: Cost effective, mature and flexible technology for rapid, high-volume production as well as lower volume uses. Wide temperature range and low barriers to custom development and display design.

Application: Home appliances, industrial control projects, medical devices, instrumentation and other commercial project uses.

- Variety of textures, colors and designs available
- High flexibility in display shape, content, colorization, and effects
- Immense range of potential customization options, everything from touch sliders, panels, buttons to metallic foil effects, ruggedization, embedded and discrete supplementary LED indicators, etc.
- Flexible minimum order quantities

VA LCDs – Module Drawing & Specs





Display type: VA, Normally Black
Driving voltage: 5V
Operating Temp: -20˚C to 70˚C
Storage Temp: -30˚C to 80˚C
Connector

- FPC + COF (COG technology) – 12 pins
- SPI Interface (Display)
- I2C (Touch)

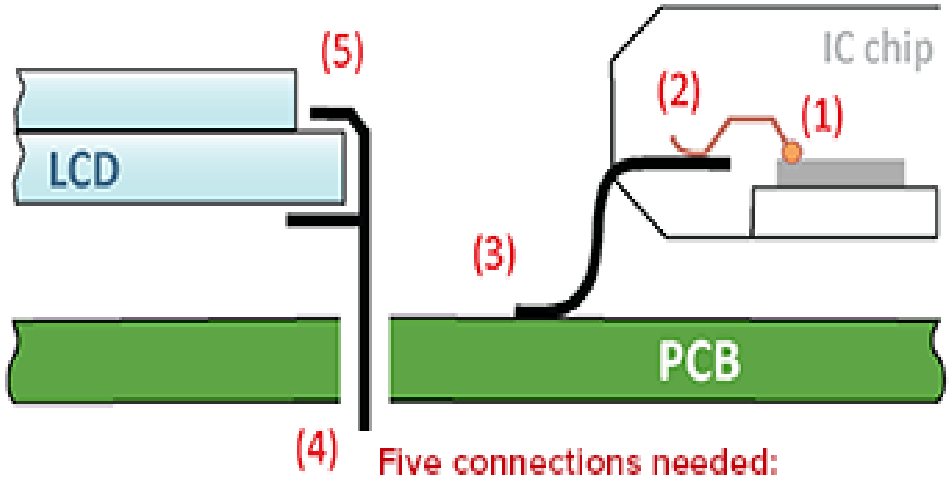
ROHS Compliant

VA LCDs – COB vs COG

COG

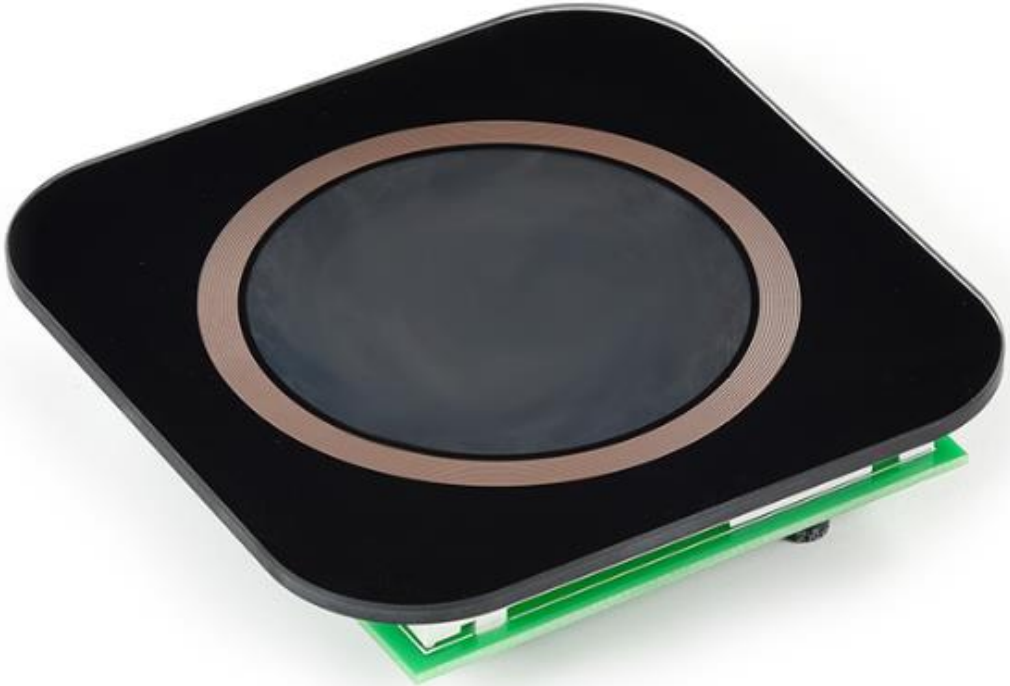
Only one connection from driver to display is needed.

COB

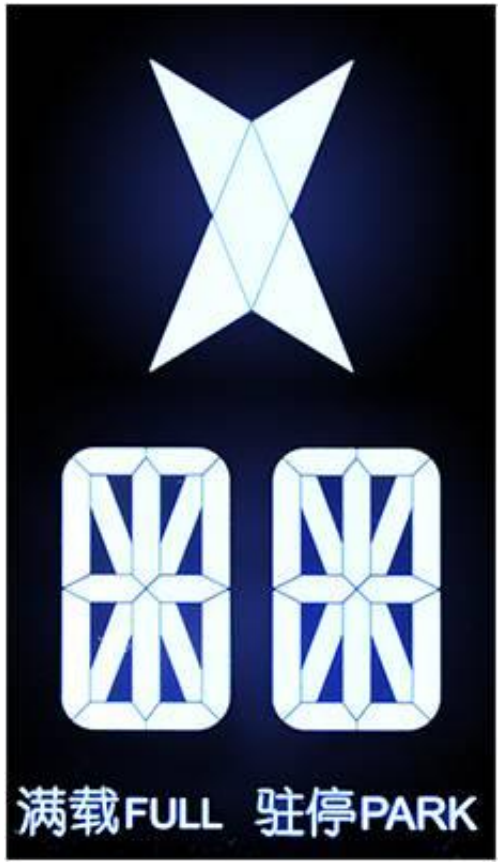


Five connections needed:
(1) and (2): wire bond from chip to frame
(3): solder connection to PCB
(4) and (5): connection from LCD to PCB

VA LCDs – Touch Display Module



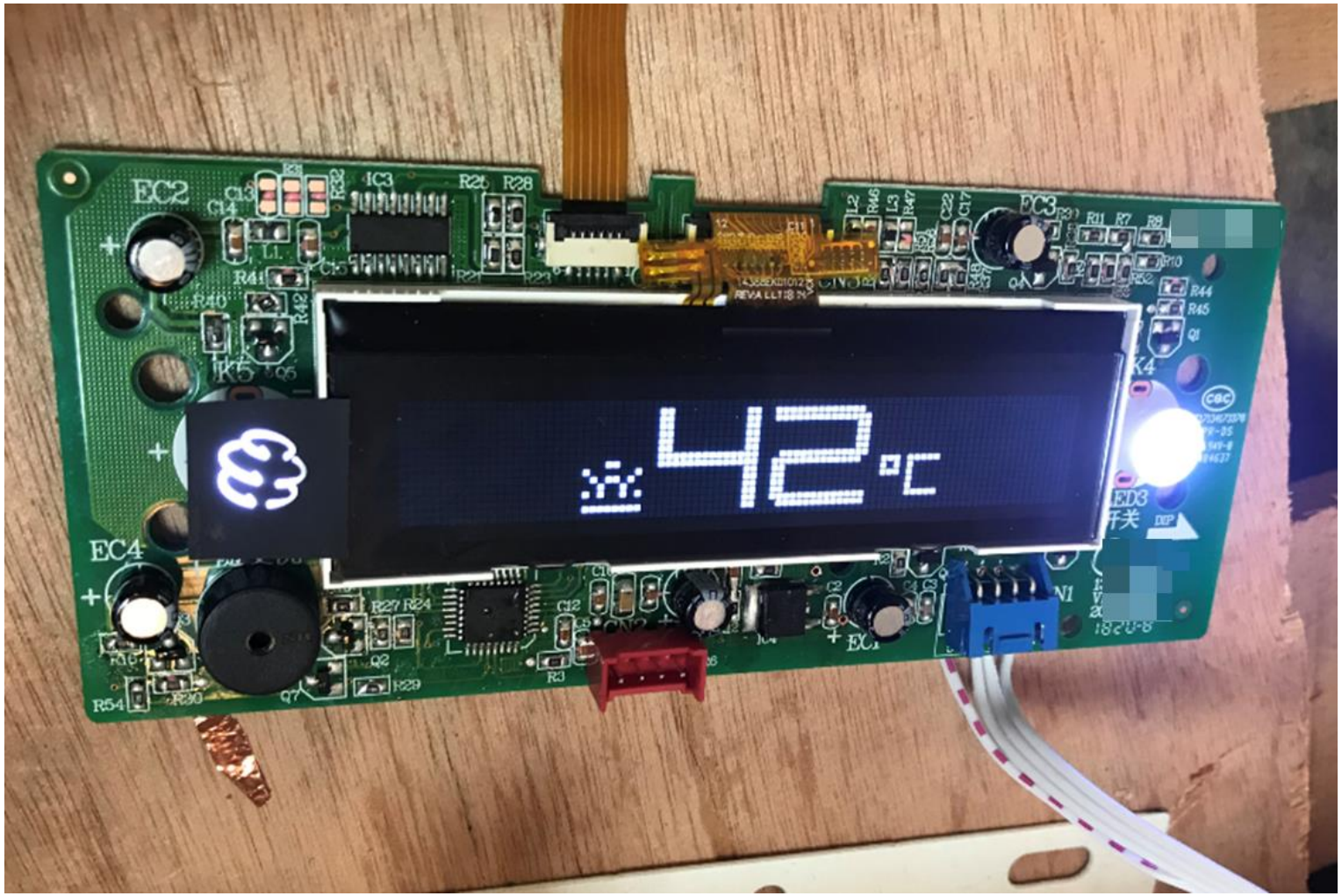
VA LCD Examples – Industrial & Automotive



VA LCD Examples – Industrial & CE

VA LCD Examples – Text + Characters

VA LCD Examples – 128 segment + Main Board



VA LCD Examples – Appliance Touch Controllers

VA LCD Examples – 128 Duty Climate Control