

Lampex Custom LCD/LCM Design Solution

There are two classes of custom module design:

LAMPEX offers Semi-Custom & Full Custom LCD Design Supports in the LCD Modules Developments.

Semi-custom modules:

In semi-custom LCD module the PCB design of a standard module is modified to add LED indicator lamps, switches, keypad traces, cable assemblies, or other front panel components.

This approach reduced overall systems cost to the customer by eliminating need for customized PCBs and interconnects. It also eliminates the overhead costs involved in the sourcing and procurement of the front panel components and additional PCBs. The semi-custom module becomes a fully tested front panel assembly that can be installed into the customer's equipment without any further processing.

Full custom Modules:

Full custom modules are LCD modules with custom LCD panel, PCB, backlight and bezel. Such designs are typically undertaken for specific applications.

LAMPEX being a vertically integrated manufacturer of LCD modules do not have to rely on an outside design support for the custom LCD panels. This in itself reduces the development lead-time and keeps LAMPEX in full control of the LCD panel performance properties and the custom module development process.

CUSTOM LCDs or LCM PROCESS:

The custom module development process involves the following steps:

Customer provides custom modules requirements.

LAMPEX reviews customer requirement and proposes suitable approaches.

The schematic is prepared in consultation with customer, which finally settles the intended functions, description, features and applications of the custom module configuration

LAMPEX submits quotation for the design and development charges for the LCD module.

Customer issues PO for custom module development

LAMPEX prepares custom module drawing/spec for customer approval

Upon approval LAMPEX commences module design.

LAMPEX submits prototype samples and preliminary spec for customer approval

Upon approval, LAMPEX issues final spec

Production phase begins

CUSTOM SOLUTIONS:

At LAMPEX, we work closely with our customers to support their special needs, as we understand that each application may call for modification to the standard configuration. With high experience in different electronic packaging technology as well as design, we can custom built the LCDs & LCMs to suite various application needs with in-house facilities and technologies.

Injection molding plastic

Stamp metal frame of various finish

Build-in heater and controller

Temperature compensation circuit for outdoor and automotive application

Custom or standard microprocessor with program development

Touch panel, keypad, sensor or switches for direct human or environment interface

Special interface connector for different requirements

Different driver/controller combination for gray scale or cost saving

Utilize standard application solution to reduce development time and cost

Mask ROM controller IC for custom fonts & enunciators

A/D conversion and communication

Different type of backlight, signal light combination to enhance visual effect or simply to give out signals

The possibilities are endless. Our past experience in designing and developing small to large sized custom modules helps us in providing the best quality and competitive price to the customer.

For all your requirements in custom LCD Panels, LCD Modules etc., send us your drawing along with your RFQ to

CustomLCD@lampex.com

Liquid Crystal Technology

Liquid crystals are a phase of matter whose order is intermediate between that of a liquid and that of a crystal. The molecules are typically rod-shaped organic moieties about 25 Angstroms in length and their ordering is a function of temperature. The nematic phase, for example, is characterized by the orientation order of the constituent molecules. The molecular orientation (and hence the material's optical properties) can be controlled with applied electric fields. Nematics are (still) the most commonly used phase in liquid crystal displays (LCDs).

The most common application of Liquid Crystal Technology is in Liquid Crystal Displays (LCDs). With the advantages of thin construction, ultra low power consumption, and with the improving viewing angle and resolutions, LCD technology has become indispensable in today's applications.

From the ubiquitous wristwatch, pocket calculator to an advanced VGA computer screen, this type of display has evolved into an important and versatile interface.

And with the continuously improving backlighting technology, these LCD technologies are widely used for nighttime viewing applications as well.

LAMPEX Offers LCDs & LCMs in various Types as below:

TN Display: TN Fluid is the least expensive type. The viewing angle is about 40-45, and must be designated "top" or "bottom" view preference. Bottom view is used when the user will be below the plane perpendicular to the display, such as on a desk calculator. Top view is used when the display is mounted on a vertical surface below eye level. TN (Twisted Nematic) LCD display forms the majority and also the most fundamental display mode for liquid crystal. The Liquid crystal forms a 90-degree twist cell. TN has the advantage of very low tooling cost and unit cost. It is economic and has reasonable viewing cone. It is widely in used for low multiplex application (up to 1/16 MUX with 1/4 acceptable to most people). The display has good neutral background color with black on segment color.

HTN Display: With 110 degree twist cell, the HTN (Hyper Twisted Nematic or High Performance Twisted Nematic depending) display exhibit a slightly yellowish/gray or greenish/gray background with very dark black segments which is acceptable to most customers. However, what it gains in its increase viewing cone as well as its tolerance to work with medium multiplex level (up to 1/32 MUX), it sacrifices in response time, thus would not be suitable for very low temperature applications. **STN Display:** STN has high contrast and wide viewing angle fluids. With 240-degree twist cell, the STN (super twisted nematic) exhibits very steep electro-optic response and is suitable for high multiplex application (above 1/16 multiplex level) up to 1/240 Multiplex level (up to QVGA).

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FSTN Display: FSTN (Film Compensated Super Twisted Nematic) as its name suggested uses an additional optical film to compensate for the color effect found in super twisted nematic displays. With finally a neutral background and virtually a black / dark gray "ON" segment color, the display gives a comfortable paper feel viewing. Due to much higher yield related cost, the display is generally reserve for high value applications such as mobile phone application and mono-color PDA application.

Graphic LCD

Very often it is required to display the data in different graphical formats in addition to text and numeric formats. These Graphic LCD's fill in that critical void in the availability of displays. The data and various process parameters can be graphically represented in various forms like bar charts, line charts, x-y charts, and circle diagrams etc., which not only enhance the presentation but also make them easy to understand. Lampex Offers from wide choice of Graphics LCMs from 32x32 Pixels to 320x240 Pixels in the MONO STN types and In Color STN from 1.8", 3.5", & 5.7" up to 320xRGBx240 Pixels.

We specialized in the following areas color displays:

Hand Held Low power

Semi and Full Custom Design

Industrial Grade specification

Sunlight Readable Technology

Typical applications include Telecom, Instrumentation, ATM's, Information KIOKS, Medical Instruments, Mobil Phones, and many more.

The **Quality Policy** of LAMPEX is focused on striving to exceed every benchmark of excellence by continuous improvement and adherence quality management systems, in a way that customer satisfaction is guaranteed in the manufacture of its products and rendering of its services.

Contact:

Technical support: anj@lampex.com

Sales and application support: mktg@lampex.com