Densitron

DENSITRON OLED DISPLAY TECHNOLOGY

Taking displays to the next level

Organic Light-Emitting Diode (OLED) technology has become one of the most versatile and widely adopted display solutions used for a range of applications across a broad spectrum of industries. From smartphone and mobile devices, audio, dynamic visual and gaming systems to medical, industrial and automotive applications, this latest generation display technology offers endless potential for cutting-edge product innovation.

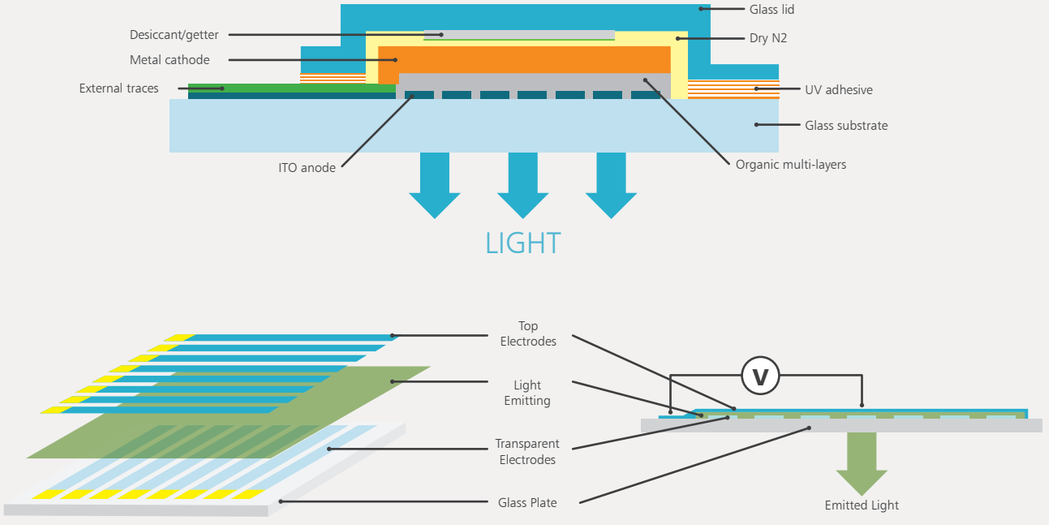
Backed by years of expertise, technical support and a commitment to ongoing product development, our leading portfolio of OLED displays deliver superior visual performance and longevity, to transform your graphical user interface and differentiate your product from the competition. Delivering brighter and sharper graphics, ultra-fast response times, outstanding contrast and with super-wide viewing angles, our OLED displays will elevate your products to the highest level, while our unrivalled technical support, development and evaluation tools help you accelerate product innovation and time to market.

How do OLEDs work?

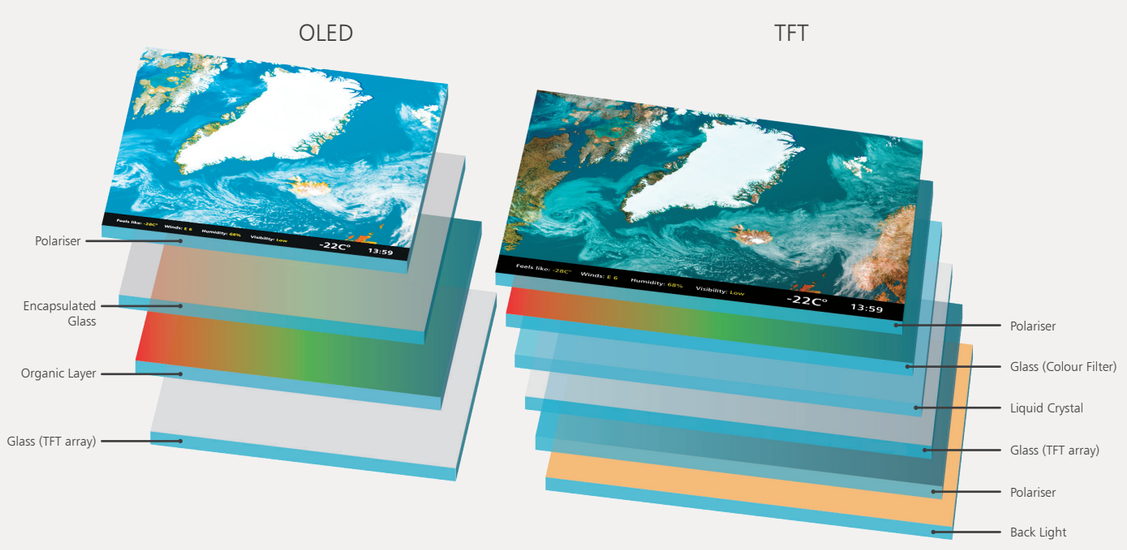
OLEDs are made from organic materials that emit light when an electrical charge is applied, eliminating the need for a backlight. The basic structure of an OLED display comprises several layers. A middle 'emissive' layer of organic material placed between two conductors (a semi-conducting anode and a metal cathode). These are usually housed between a glass top plate (seal) and a glass bottom plate (substrate).

When an electric voltage is applied, energy passes from the negatively charged cathode to the anode, stimulating the organic material to emit electro-luminescent light that is visible through the outermost layer of glass.

OLED Panel



AMOLED Panel vs TFT Panel



Types of OLEDs

There are two types of OLEDs; Active Matrix OLED (AMOLED) and Passive Matrix OLED (PMOLED), each with their own specific characteristics and application benefits.

AMOLED

AMOLEDs are driven by TFTs (Thin Film Transistors) to maintain the line pixel state, enabling them to be larger and unrestricted in terms of size and resolution. Delivering high sunlight readability, super-wide viewing angles, ultra-fast response times and low power consumption, these displays with their excellent colour saturation and contrast ratio offer extensive application capabilities including video playback.

- Low power consumption – up to 60% less than LCDs or TFTs
- - 20°C to 60°C operating temperature
- Ultra-fast microsecond response times
- Very high contrast ratio
- Better sunlight readability
- Unlimited viewing angles

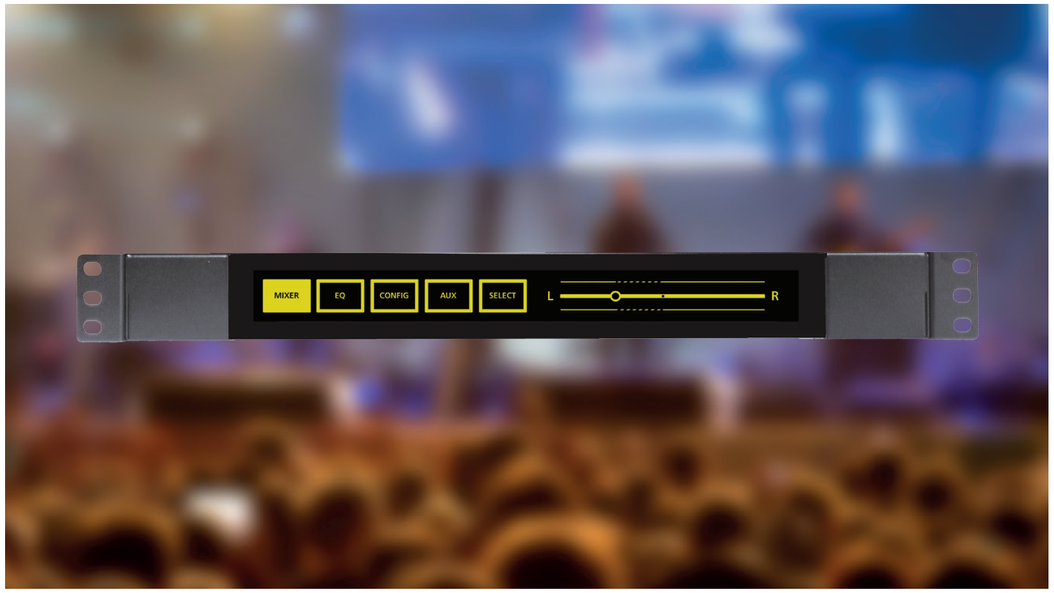
Advantages of OLED Technology

Visibility
Excellent long-range visibility with wide almost 175°viewing angle

Size
Flexible display from 0.25mm; glass display with integrated touch just 0.7mm

Image Quality
Superior contrast ratio, colour saturation and graphical presentation

PMOLED



Offering good long distance visibility and a wide viewing angle, PMOLED devices deliver high colour saturation, high contrast and high speed as well as good power efficiency and low heat generation. Some ICs also provide an internal charge pump from a battery power supply enabling less wear on components. PMOLEDs operate at very low temperatures and are available with ultra-thin profiles of 1.2mm, with options for full colour and monochrome displays in yellow, white, green and blue.

- 1.8 – 3.6 V
- Very high contrast ratio
- $>$ 160° viewing angle
- $<$ 10 μ response time
- - 30°C to 85°C operating temperature

Advantages of OLED Technology

Interface
MIPI, RGB, Parallel MCU, SPI and I2C

Economy
Efficient, low power consumption & heat output

Flexible
Curved flexible OLED available for wearable applications

The Consultative Approach

At Densitron, our extensive product knowledge and expertise enables us to continue to push the boundaries of display technology. Our commitment goes beyond that of developing and delivering ground-breaking OLED displays. We take a full-service partnership approach to all our customer needs giving you access to our highly skilled in-house team of design and development engineers to help you overcome any technical challenges that arise during product conceptualisation, design, manufacture or installation.

Our customers have privileged access to exclusive data from our extensive range of tests, research studies and evaluation projects that examine the challenges of OLED display technology such as colour lifetime estimations, burnout and fading. This valuable data provides you with the insight and proven knowledge to develop solutions that will maximise user experience as well as the lifetime of your products.

We constantly monitor the OLED market, actively engage with industry associations and substrate suppliers as well as review the latest encapsulation processes to enable us to develop new and enhanced solutions that will improve the performance and lifetime of the Blue OLED material. This ensures our OLED technology delivers optimum longevity and colour saturation.

In addition to our extensive product portfolio, we can also supply and customise everything for you, from the electronics and embedded boards, to the displays, mounting kits and more, further reducing development time and accelerating time to market.

Service
We invest in R&D facilities and staff to deliver unrivalled service in our industry

Support
We offer tools to assist you with evaluation, prototype development and production

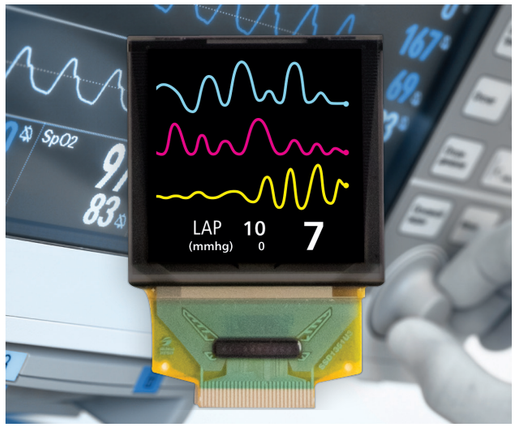
Innovative OLED Display Technology

Our leading portfolio of OLED technology includes colour and mono displays offering the latest touch capability variants as well as options for optical bonding to enhance outdoor visibility. We also provide a range of curved display options using pliable substrates such as plastic, metal and flexible glass, which provides a fully flexible ultra-thin, light and extremely durable display. In addition, we have ready to go plug-and-play solutions to further speed up development and product launch.

Whatever your application or specific needs, our diverse range of world-class OLED displays, development tools and evaluation kits provide you with solutions to facilitate cutting edge product design using the latest generation display technology with a longevity you can trust. From displays for digital audio and broadcast mixing decks, bluetooth personal tracking devices, medical and security products and devices, to power analysis instruments and automotive applications, we have an OLED display that will differentiate your product and give it a competitive edge.

Thanks to our ongoing commitment to research, test and development, our displays provide the assurance of superior visual performance, super-wide viewing angles and ultra-fast response times with next generation product longevity to give you complete confidence.

OLED Display Range



Our latest generation OLED displays include colour and mono variants, with supporting Arduino shield boards for fast and efficient evaluation. Our extensive range comes in a variety of sizes, from just 0.66” through to 5.5” displays, and offer super-wide viewing angles enabling flexibility to work in either portrait or landscape mode.

The introduction of advanced Projected Capacitive Touch (PCT) and Haptic Touch technology further elevates our OLED displays to the next level by eliminating the need for buttons and switches to deliver a cost competitive state-of-the-art interface and enhanced user experience. In addition, optical bonding is also available as an option to enhance visibility for outdoor applications.

Our OLED display solutions are also designed to slot easily into 1U racks.

Popular PMOLED sizes include: 3.12”, 2.8”, 2.7” 2.4”, 1.54”, 1.5”, 1.7” and 1.3”

Densitron Arduino Development & Evaluation Kits

When time to market is critical, we offer a range of proprietary USB development kits based on the Arduino Uno platform that include everything you need to evaluate and demonstrate the suitability of our OLED displays, aiding project approvals, investment decisions and accelerating product completion.

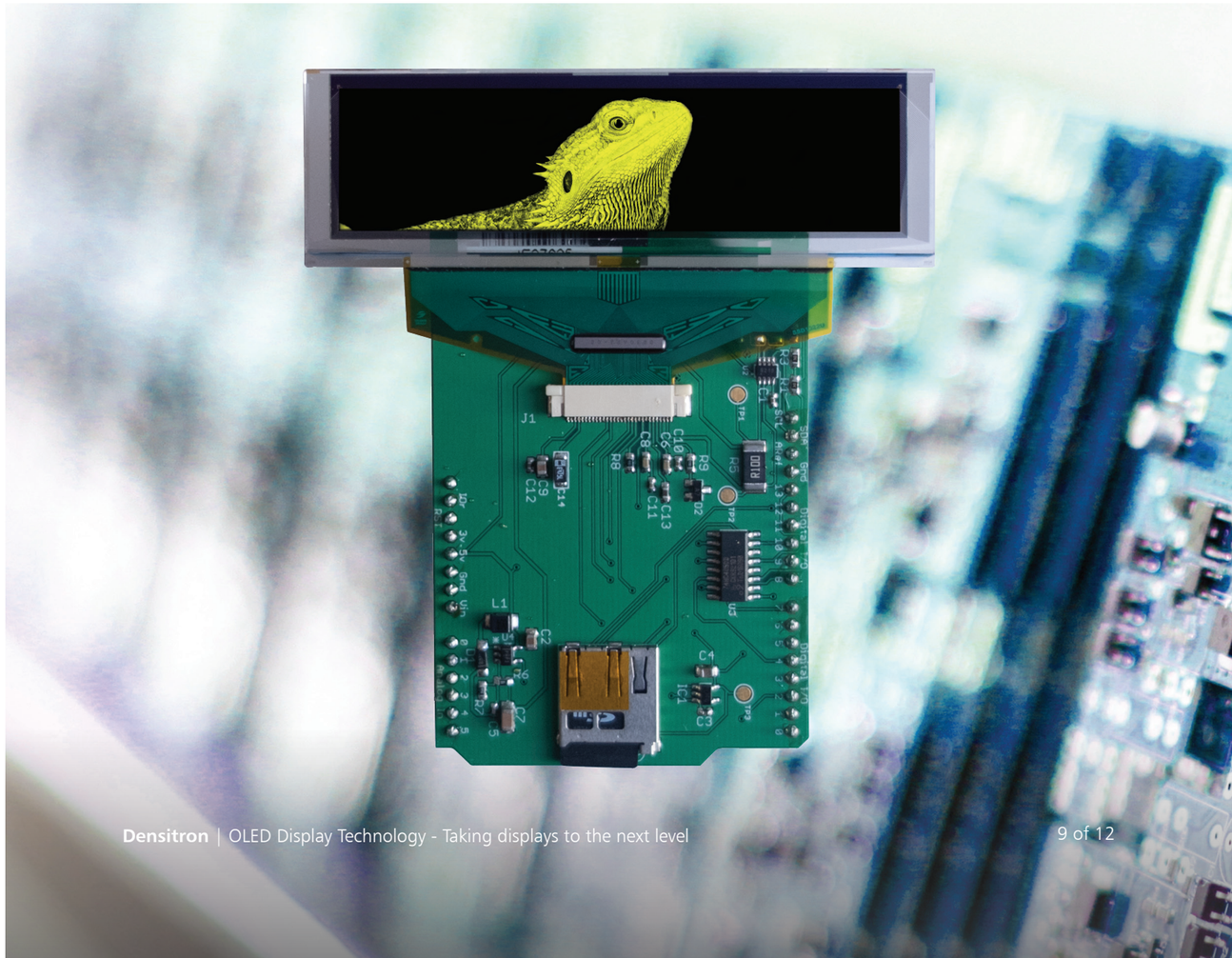
Our Densitron OLED Shield development kits come pre-loaded with the required software, have a current monitor, integrated SD card and includes an Arduino UNO R3 controller platform with specific shield board matching display drivers.

Hardware Features

- USB 1.1 & USB 2.0 compatible interface
- Small board form factor (100mm x 55mm)
- Supports OLED displays with SPI
- On-board switching power supply
- Current measurement function
- Hot plug and unplug detection

Software Features

- Open source libraries from Arduino
- Picture show from SD card to display BMP format
- Software development functions
- Picture slide show
- Brightness control
- Displays current measurement
- PCT Touch control



Value-added Features and Customisation

DensiTouch® PCT Sensor Technology

Our DensiTouch® Projected Capacitive Touch (PCT) technology enhances standard OLED display modules to enable full gesture solutions using up to 10 simultaneous touches. Featuring a glass construction, they provide maximum optical clarity, maintain their shape over time and expand the lifespan of a product through their increased durability.

Combining a variety of glass structures, from GG (Glass Glass) to OGS (One Glass Solution), and GFF (Glass Film Film), we also provide full or semi-custom sized PCT sensors in a variety of thicknesses using different construction types and driver controllers. FPC length and shape customisation is also possible.

Cover Lens Customisation

Our bespoke cover lens service encompasses chemical or tempered hardening of the cover lens, Anti-Glare (AG), Anti-Reflection (AR) or Anti-Smudge (AS) optical treatments, colour and graphic printing, circular or rectangular cut-outs, thus enabling the integration of mechanical actuators, camera lens etc.

Haptic Touch Option

For an enhanced user experience, we offer the option to integrate Haptic feedback technology to our Touch Sensors, which can be tailored to suit your project requirements.

Optical Bonding

Our Solisbond® Optical Bonding Service enhances the performance of our multi-touch OLED displays by eliminating reflection and fogging, improving reliability and brightness and further increasing sunlight readability and resistance to shock.

Exclusive Research and Test Studies

As part of our continual commitment to product innovation, we undertake extensive research tests and trials on our range of OLED display technologies. We ensure our customers have privileged access to all of these studies and test results, which include colour saturation, fading and lifetime estimation tests, shrinkage and reliability, carrier construction variants as well as power and circuitry studies. This exclusive data enables you to design and engineer the ultimate graphical user interface for maximum performance.

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About Densitron

Densitron is a creator of display technology which is tailored to the needs of customers around the world. We take a consultative approach to design, partner with our customers to understand their particular requirements and then create bespoke products to address those.

With offices in Asia, Europe and North America and experienced application engineers based worldwide, our global approach to innovation is always underpinned by a thorough local knowledge and understanding of cultural requirements.

Our customers depend on us for:

- Our in-depth knowledge of the latest display and embedded technology
- More than 40 years of experience in designing electronic displays and embedded boards
- Expertise in market sectors ranging from broadcast and medical to security and automotive

Quality in everything we do

We pride ourselves in our world-class engineering and delivery of the highest quality solutions. All our products undergo stringent quality testing in product development, are REACH and ROHS certified, and are manufactured in accordance with the ISO9001:2008 quality standard.