



ADVANCED DISPLAY TECHNOLOGIES

AMOLED | PMOLED | MINI-LED | TRANSFLECTIVE

Mini-LED Display v.s. Transflective LCD

Mini-LED Display Modules

Our next-gen LCMs use a full-array architecture with ultra-small LEDs to deliver superior contrast, brightness, and color accuracy compared to traditional panels.

| KEY FEATURES

SUNLIGHT READABLE

Delivers extreme brightness levels ranging from 3,000 to 20,000+ nits, ensuring perfect visibility in direct sunlight.

FULL ARRAY LOCAL DIMMING (FALD)

Utilizing Full Array Local Dimming (FALD), this system offers 4,096 levels of brightness control per zone. This precision creates vibrant light scenes and deeper blacks, significantly boosting shadow detail and overall contrast.

HIGH CONTRAST RATIO - 1,000,000:1

Features 4,096 adjustment levels per zone to adapt to content. By making whites brighter and blacks deeper than traditional backlights, it achieves an ultra-high contrast ratio for enhanced image depth and clarity.

LOW POWER CONSUMPTION

LEDs dim or turn off in dark areas to reduce energy waste, delivering up to 50% energy savings depending on the displayed content.

LOW TEMPERATURE

Cooler Operation ($< 50^{\circ}\text{C}$) for enhanced system stability.

LONGEVITY

Because LEDs are usually only partially illuminated, overall power consumption is significantly reduced, extending the lifespan to over 50,000 hours.

Transflective LCD Modules

These hybrid TFT-LCD modules switch between transmissive and reflective modes, utilizing ambient light to ensure high visibility and energy efficiency across any lighting environment.

| KEY FEATURES

DUAL-MODE VISIBILITY:

Combines an internal backlight for dark settings with ambient light reflection, maintaining perfect visibility in both direct sunlight and low-light environments.

ULTRA-HIGH BRIGHTNESS

Reaches up to 9,000 nits (e.g., AB-J397-TFV), ensuring sunlight readability with no washout in outdoor applications.

WIDE OPERATING TEMPERATURE:

Performs reliably from -20°C to $+70^{\circ}\text{C}$, allowing for consistent operation in outdoor, indoor, and dark environments.

VERSATILE INTERFACES:

Supports modern connectivity options including 3-Wire SPI + RGB 24-bit and MIPI interfaces.

INTEGRATED TRANSFLECTOR LAYER

A special optical layer reflects external light while transmitting the internal backlight through the display.

LOW POWER & ENERGY EFFICIENCY

Reduced backlight usage lowers power consumption and heat, improving reliability for industrial and automotive systems.

DURABILITY FOR HARSH ENVIRONMENTS

Engineered for harsh environments with high resistance to vibration, shock, and extreme outdoor exposure.

Targeted Applications: Choosing the Right Technology

Mini-LED Display Applications

Ideal for environments requiring maximum visual impact, extreme brightness, and high-dynamic-range (HDR) performance.

INDUSTRIAL

Hand-held computers and tablets for outdoor use, outdoor meters, gas station pumps, sewer cameras, solar farm displays, automatic hydraulic motor pumps and more.

OUTDOOR DISPLAYS

Mini-LED displays are sunlight-readable, making them perfect for applications like ATM's, ticketing machines, advertising kiosks, retail and commercial displays and wayfinding systems.

TRANSPORTATION

Mini-LEDs elevate transportation displays, including yacht and boat navigation systems, motorcycle gauges, construction equipment control panels, tractor monitoring systems, and more.

HEALTH CARE

Deliver unmatched clarity in medical imaging and diagnostics, where precision visuals are critical.

AUTOMOTIVE & EV CHARGING STATIONS

Enable vivid, dynamic visual experiences for head-up displays (HUDs), infotainment systems, and EV charging interface panels with high-performance LED solutions.

Transflective LCD Applications

Ideal for portable, battery-powered, or high-ambient light devices that must maintain visibility across changing lighting conditions.

HANDHELD INDUSTRIAL DEVICES

Rugged tablets, barcode scanners, and mobile data terminals that transition from dark warehouses to bright outdoor sunlight.

MARINE ELECTRONICS

Energy-efficient fish finders, GPS plotters, and boat dash displays that utilize ambient light to reduce power draw.

OUTDOOR INFRASTRUCTURE

Smart meters, parking meters, and outdoor signage where thermal management and low power consumption are critical.

WEARABLE TECHNOLOGY:

High-resolution fitness trackers and smartwatches that require constant visibility without draining battery life.

SMART HOME & IOT

Outdoor-mounted intercoms, security panels, and irrigation controllers exposed to varying environmental light.



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