

## Ultra Thin Planar Light Panels for LED Backlight Solutions, Move the Light, not the Light Source

Eastprint incorporates thin light panels technology into membrane and capacitive switch user interfaces for LED backlighting. Polycarbonate panels from 0.005 to 4 inches thick are reflectively pixelated to provide smooth light delivery to targeted areas. Designed and manufactured in the United States, a low cost NRE design fee and quick turn prototypes enable a wide range of volume capabilities, from hundreds to millions with fast redesign capability.

**OVERVIEW:** Pixels creating an illuminated image are embedded inside a thin polycarbonate (plastic) light panel. Light escapes the panel by reflecting off the precisely placed pixels. The new and unique process IP allows prototypes in as little as 3 weeks built with production quality tools, production follows in 6-8 weeks. Eastprint works closely on the design, logistics, engineering, and manufacturing team which provides clear and timely communication to keep your project moving quickly.

**SPECIFICS:** Light panels can be created from 0.005 to 0.125 inch thick polycarbonate to accommodate any stack up. Panel size can range from small (<1 square inch) to large panels (12 x 18 inches plus.) The UI solution can be large or small using single or multiple light panels. Side or direct fire LEDs can be used as a light source to address specific mechanical constraints. A custom optical isolation technique reduces light bleed by 85-100%.

**SWITCHING:** Targeted, measurably consistent backlighting of tactile dome switch keypads, capacitive touch interfaces, and logo nameplates is enabled by thin light panels. Tactile response is maintained with flexible panels ranging from 0.005 to 0.015 inch thin. Non-tactile light panels range from 0.020 to 0.0125 inches thick. Cap touch thru light, moves the LEDs and power away from the sensor for interference free sensing. Visual feedback is achieved by turning on & off individually lit sections and/or icons that can be lit on actuation.

**TUNING:** The light panels can be tuned to optimize the entire backlight system, not just the light panel. Changing the image density keeps the apparent brightness consistent regardless of the distance between the LED and the lit area. Thin polycarbonate panels allow mechanically flexible backlighting processing including In Mold Decoration (IMD), thermoforming and heat staking. LCD and LED displays can be backlit or integrated into the UI. Quick turn prototyping and custom computer based tooling make quick changes and smooth measurably consistent luminance a reality.

**SUMMARY:** Light guide material suitable for medical, industrial & consumer applications. From 0.005 to 0.125" thin solutions for tactile dome, membrane, and capacitive touch switches. Sub \$1,000 NRE/tooling fee - 3 – 4 week prototype delivery.