DISPLAY ENHANCEMENTS AND OPTICAL SERVICES

BRIGHTNESS ENHANCEMENTS

Today’s LCDs, OLEDs and Plasma displays need to be able to withstand severe temperature extremes and solar radiation, as well as be readable when exposed to direct and indirect sunlight, glare and reflection. General Digital Optical Bonding Laboratories offers several brightness enhancement solutions to meet or exceed our customers’ requirements.

Benefits
› Increase brightness up to 100% with enhancement films alone
› Improve display contrast and readability
› Improve display clarity and image quality
› Improved operating temperature range
› Superior uniformity

Options
We offer several options incorporating both passive and active backlight modifications to improve sunlight readability. Our most popular and cost-effective solution is GenFlective™ technology, a hybrid of Transflective and Passive Enhancements:
› Requires no more power than OEM panel
› Dissipates no more heat than OEM panel
› Simplifies integration of value-add display
› Easier to address cooling due to low power
› Typical enhancement of OEM luminance of 20% to 100%

Some examples of our Active Enhancement options are below. Please see our Web site for our complete offering of unique LED backlight improvements.
› LED
  - Sunlight readable, standard luminance, NVIS display options
  - High color gamut achievable with high power LED backlight
  - Lower Heat and EMI (Electromagnetic Interference) Emissions
  - Lower Power Consumption
  - Extended Life Expectancy
› NVIS (Night Vision Imaging System)
  - Compliant to MIL-STD-3009, Classes A,B, C
  - Dual mode switchable (Day/Night) backlight controller
  - Sizes ranging from 5” to 42” and above

FILM LAMINATIONS

Light emitting displays all suffer from a visibility problem when used under conditions which include high ambient lighting levels, such as kiosks, advertising displays, control towers and aircraft cockpits. We can passively enhance a display by applying optical films to its front surface, thereby improving brightness and contrast by reducing surface reflections. GD-OBL offers film lamination services on customer-consigned material for all of the specialty films listed below. All films are also available for purchase, as well.

Films Available
› Antireflective Film (AR)
  - Reduces surface reflections, improving brightness and contrast two to three times without making display brighter
› Antireflective Film and Antiglare Film (AR & AG)
  - Reduces surface reflections, improving brightness and contrast two to three times without making display brighter; softens direct light source images in reflection
› Conductive Film
  - Reduces EMI/RFI emissions
  - Conductive transparent film for touch screens
› Privacy Film
  - Reduces and controls viewing angle
  - Redirects light and retains data privacy
› Specialty Films
  - Neutral Density Films increase contrast of display
  - Color Selective Films alter the output color of the screen
  - Antistatic Films
  - InfraRed (IR) Films
› Optical Films for Reflective LCDs
  - Polarizing, retardation, and diffused films are combined into a single film for reflective color LCDs

NVIS COMPATIBLE LCD MONITORS

To make a display NVIS (Night Vision Imaging System) compatible, General Digital expertly re-engineers the existing display hardware to virtually eliminate the emission of high levels of IR radiation. In some instances, we install entirely new backlighting systems, using the latest display technology. Both approaches are fully compliant with MIL-STD-3009. By configuring an LCD monitor to be night vision compatible, an NVG user is easily able to view information on a display screen, as well as view their surroundings, while using night vision goggles.
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OPTICAL BONDING

Optically bonding an LCD, OLED or Plasma display improves both optical performance and durability. GD-OBL is able to remove all of the air gaps, thus reducing the number of internal reflecting surfaces. Providing a durable adhesion between the flat panel and the overlay improves the displays’ ability to resist shock, vibration and moisture.

Benefits
› Increased luminance
› Increased contrast
› Reduced internal reflections
› Improved puggedization
› Vandal prevention
› Extended Operating Temperature Range through the use of bonded LCD, OLED or Plasma Display heaters (–55°C is achievable with our proprietary formula)
› Elimination of condensation/moisture between display and overlay

Adhesives
› Silicone-RTV
› Epoxy
› Polyurethane
› Ultraviolet (UV)

Target Combinations
› Glass (overlay) to Flat Panel
› Glass to Glass (robust anti-vandal shield)
› Polycarbonate to Glass (flat panel)

Overlay Types
› Contrast Enhancement Filters
› Anti-Vandal Shields
› EMI/RFI Shields
› Heaters – to extend the operating temperature of flat panel displays and backlights in cold environments
› Touch Sensors – support for virtually any touch technology or manufacturer
› Privacy Filters

Specialty Bonds
› XO-Fraim™
› Extended Temperature Bond (from –55°C to +100°C)

Types of Filter Coatings/Etchings
› Antireflective (AR)
  - Single-Sided (recommended for bonded filters)
  - Double-Sided (recommended for non-bonded filters)
› Antiglare (AG)
  - Chemically Etched
  - Mechanically Etched
› Easy-Clean (smudge resistant)

MORE PRODUCTS AND SERVICES
› Condensation and Moisture Prevention
› Contract Manufacturing
› Support Electronics

For more information on these and other topics, and to download white papers and technical documents, please visit our Web site today at www.GDoptilabs.com.