

Technology Advances in Automotive IVI Displays



Achieve better display performance by integrating MinebeaMitsumi's backlight-controlled localized dimming technology into advanced, high-contrast automotive displays.

In-vehicle infotainment (IVI) displays are an innovative and essential tool commonly found in the center stack of most modern vehicles. They deliver both entertainment and information to the driver and passengers through various mediums — voice commands, interactive touch displays, audio/video, etc. IVI functions as a central unit that controls, monitors and connects smart vehicle systems such as GPS navigation, Bluetooth, HUD (Heads-Up Display), telematics, ADAS (Advanced Driver Assistance Systems), smartphones (to utilize either Apple CarPlay or Android Auto), and more in order to provide the user a great driving experience.

A key aspect of the IVI is a high resolution touch screen. Most automotive displays in the market utilize LCD (Liquid Crystal Display) technology which relies on a good quality backlight unit (BLU). BLU's are comprised of an array of LED's (either edge lit or direct pattern), optical light guide plate, reflector, diffuser and prism sheets.

All of these components work together to provide the performance and uniformity required in increasingly complex and high-resolution LCD screens.

MinebeaMitsumi develops and manufactures millions of BLU panels per month (sized up to 15 inches) and has extensive experience designing solutions not only for IVI and digital cluster automotive applications, but also for use in smart phones, tablets and laptop PC's.

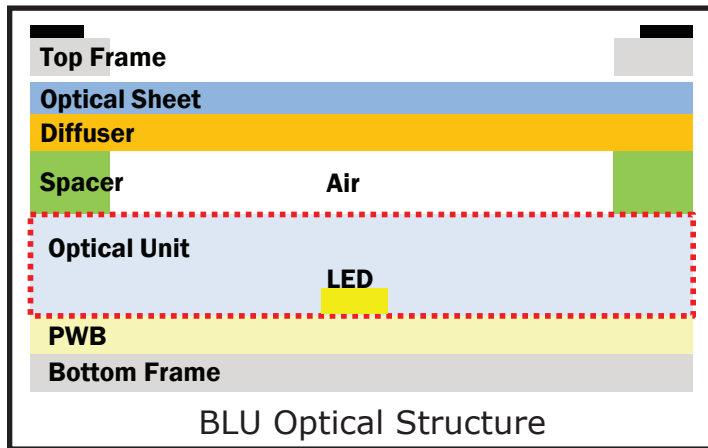


MinebeaMitsumi Backlight Units






New 2D Local Dimming Technology



As OLED (Organic LED) technology began to grow within the display market, our R&D team turned their attention to advance the capacity of LCD screens in automotive applications. Using our light guide plate technology, we integrated a prism array lens into the BLU design that enables high-quality 2D local dimming.

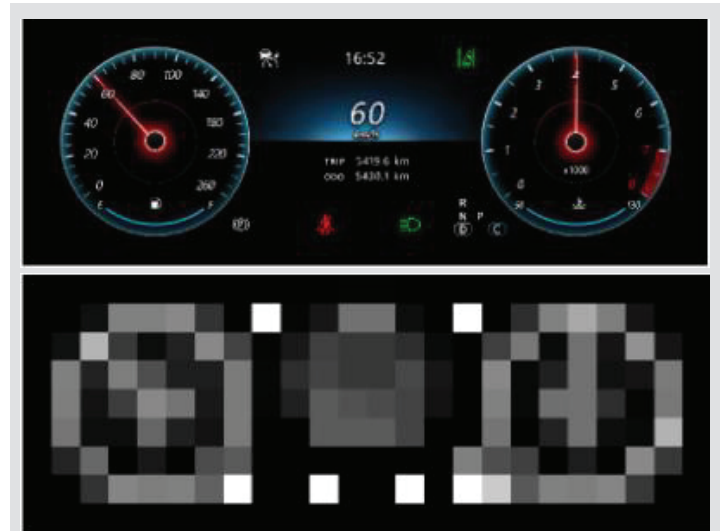


Our 2D local dimming technology answers the demand for better display quality while maintaining automotive standards and regulating cost. We employ an LED array or direct-type LED which indicates that the LEDs are directly behind the screen instead of along the edge. Then, using software, we can “dim” or turn off specific LEDs to create richer blacks and enable higher contrast.

-  High luminance performance
-  Design flexibility
-  Seamless display
-  Low power consumption
-  High contrast

Backlight options with varying quantities of LEDs allow OEM and Tier customers to gauge the right performance level to fit within their display budget.

This type of robust BLU provides an advanced vehicle display solution with proven reliability to keep pace with the technological advancements of the global display industry. OLED based solutions do not have the same automotive-grade reliability needed to meet rigorous customer requirements.



Top image: LCD display

Bottom image: Backlight-only view shows individual LED control capabilities

To date, MinebeaMitsumi has completed development work with a major OEM and has also expanded development to larger screen sizes. By incorporating MinebeaMitsumi’s 2D local dimming BLU solution, our OEM and Tier customers are offered the flexibility to choose between multiple LED-count options based on their target price and performance requirements.