



Custom LED Backlight for Displays

Application Details

Industrial Automation and Electronics industries utilize a wide range of displays that serve for the purpose of providing detailed performance information, system status and valuable information to the system users and create action plans based on that timely information.

These indicators require a specific source of light, so proper function, energy consumption and replacement of these lights are fundamental to keeping users effectively informed through the various displays and indicators in the front of the equipment where these are being used.

The challenge was to develop a light source that could save energy and also increase the durability to avoid excessive operating and service costs that required to continuously replace the original lamps that provided the backlight for the main panels' LCD displays, as well as the LED indicator for the equipment under operation.

Application Requirements

The new backlight display assemblies required to have the proper brightness for visualization of the contents on the LCDs, and within the specified power consumption parameters provided. These indicators were required to have a very specific color, and the lens was also required to have the most optimal shape and texturization for proper light diffusion of the emitted light coming from the LEDs that were installed under the lens.

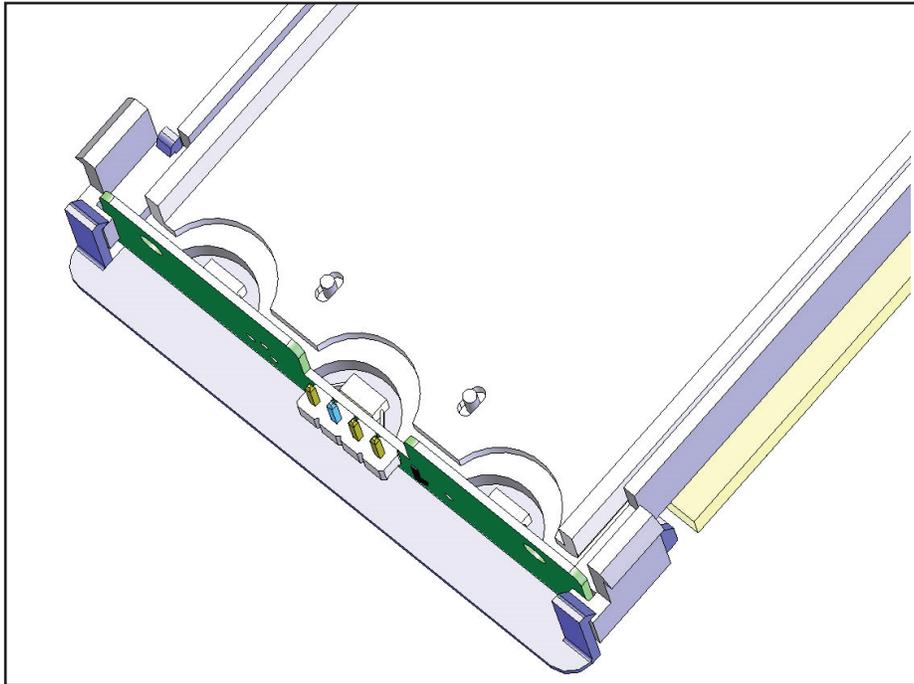
The backlight assemblies also had to comply with serviceability requirements to optimize the technicians time spent at servicing the related equipment.

In addition to the electro-optical requirements, the components also had to comply with the very stringent temperature performance parameters, so the materials and construction of the components had to count with an optimized design with corresponding materials selected accordingly.

Solution & Product

A specific lens and reflector assembly was designed that allowed for a simple and yet efficient backlight for the LCD display. Selected LEDs that provided the optimal brightness while also keeping the CIE coordinates consistent for all of the displays where the backlight was being applied.

In order to prevent any light bleeding through the from of the panel, special shields were integrated in the assembly that prevented unwanted light where not needed. All the light was therefore concentrated in the areas that were really needed.



All-in-all: Meeting the need

Direct communication with the design team was key to developing the desired solution. Many iterations and proposals were considered but the ultimate goal was to save energy and optimize serviceability of the equipment.

LEDs with efficient backlight and efficient power management design, achieved the energy reduction and power usage goals of the control boards, as well as the reduction of time required to service the panels where the assemblies are applied.

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