

# Backlighting Review Checklist

A review worksheet for LED, light guide, dead-front and illuminated membrane switch designs.

Use this for backlit membrane switches, lighted icons, display windows and night-use control panels.



Backlighting adds optical, electrical and stack-up decisions to the inte

## Engineering source notes

- Backlighting can support visibility, status indication and product appearance, but it adds electrical, optical and stack-up complexity.
- Common routes include discrete LEDs, side-lit light guide films, fiber optic systems and electroluminescent panels; each changes thickness, uniformity, power and cost.
- Dead-front graphics, diffusion, light blocking and final enclosure review are essential to prevent hotspots and light leakage.

## Lighting target

Project/model	Lighting method
LED color(s)	Operating voltage
Viewing environment	Brightness target or reference

## Lighting design inputs

- [ ] Lighting type is selected or open for recommendation: discrete LED, light guide film, EL, fiber optic or hybrid.
- [ ] Icon/window size, position and required brightness are marked.
- [ ] LED color, color temperature or wavelength is specified.
- [ ] Power supply, current limit, driver method and duty cycle are known.
- [ ] Uniformity requirement and acceptable light spots are discussed early.
- [ ] Night use, daylight readability, dimming or indicator-only function is defined.

### Overlay and optical details

- Dead-front icons and light-blocking layers are identified.
- Transparent, translucent, diffused and opaque areas are separated in artwork.
- Window color, haze, diffusion and surface finish are reviewed.
- Light leakage around keys, edges, connector and tail is checked.
- Embossing near illuminated areas is reviewed for shadows or distortion.
- Color matching is checked with real LEDs and printed layers, not screen color only.

### Assembly and reliability

- LED placement does not interfere with dome, spacer, tail bend or adhesive frame.
- Heat, current draw and long-term brightness change are considered.
- Backlight layer thickness fits the housing stack-up.
- Circuit testing includes LED polarity and brightness check.
- Samples are reviewed in the real enclosure and actual viewing angle.
- Environmental tests include temperature, humidity and cleaning exposure when relevant.

### Files and samples to provide

- Artwork with lit and non-lit areas separated.
- Circuit drawing or schematic with LED/power details.
- Target brightness photo, old sample or reference panel.
- Housing drawing and display/window alignment requirement.
- Operating environment and power limitation.
- Acceptance notes for uniformity, color and light leakage.

### Lighting approval notes

Approved lighting method	Approved LED color
_____	_____
Light leakage result	Uniformity result
_____	_____
Open engineering items	Owner/date
_____	_____

### Technical references reviewed

- MacDermid Alpha Autotex hardcoated polyester films: <https://www.macdermidalpha.com/products/film-smart-surface-solutions/>
- JASPER factory engineering review practice and public product/resource pages: <https://www.jasperele.com/>

Send drawings and requirements to JASPER

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