

Top 5 Considerations for LED Lighting in EV Charging Stations



When designing lighting systems for electric vehicle (EV) charging stations, engineers must navigate a complex array of technical requirements and performance criteria for efficiency, durability, and compliance. American Bright technical experts are on hand to assist design engineers select the right LED lighting solution for their EV projects. To get the now-familiar colored illumination that differentiates brands, most charging installations rely on the RGB+IC addressable light strips or rope lights, versatile and easy-to-install solution. Light strips or rope lights uses extend to charging status indicators on cables or the console and communicating in color codes whether the station is available, charging, or idle. In general, here are the top five considerations that should guide your decisions:

1. IP Ratings for Durability and Safety

To protect lighting from environmental factors in outdoor EV charging stations, make sure LED strips or rope lights have the appropriate Ingress Protection (IP). The IP rating determines how well the lights are protected against solids and liquids. For outdoor use, an IP rating of at least IP65 is recommended, as it ensures the components are resistant against dust particles and can withstand low-pressure water jets – which is synonymous with moisture-proof durability in varied weather conditions. Also consider IP68 ratings with higher submersible resistance, particularly in areas prone to flooding or heavy rain.



2. Brightness and Color Temperature

Brightness, measured in lumens, needs to be adequate to make charging stations visible from a distance and provide safe illumination day or night. Consider the installation height and area coverage to determine the optimal lumen output. Additionally, the color temperature of the LEDs affects visibility and aesthetics. A color temperature of around 5000 Kelvin provides a bright, daylight-like light that is ideal for functional spaces like charge points. This higher color temperature helps in reducing eye strain and increases visibility during night hours, enhancing safety for users.



3. Mini-LED Displays

The new development in Mini LEDs have produced vivid high-resolution displays with much higher brightness levels compared to traditional methods of LCM backlighting. The result is a legible readout even when the screen is in full sunlight, which makes them ideal for outdoor EV charge points. Despite their bright output, super-efficient mini-LED displays operate with low power consumption.

4. Product Life and Reliability

The longevity of lighting installations contributes to lower cost of ownership. Select LEDs with a proven track record of long lifespans, typically rated for at least 50,000 hours. Reliability also extends to the hardware used to house and mount the LEDs – ensure that these components are also built to last and easy to maintain or replace. Consider options with robust warranties and good customer support to guarantee that any issues can be quickly addressed without significant downtime, which is critical in maintaining 24/7 operational capabilities at EV charging stations.

5. Installation Location

Consider the specific environmental conditions of the installation site. Coastal areas might require corrosion-resistant materials due to salt air, while areas with extreme temperatures will need LEDs capable of operating in both hot and cold conditions, which may determine the necessary IP ratings. Additionally, think about the direction and angle of light to minimize glare for both drivers and pedestrians.



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Choosing the right LED lighting for EV charging stations that involves careful consideration in each of these factors – IP ratings, brightness, energy efficiency, product life, and installation location – design engineers can ensure that their lighting solutions are not only effective but also economical and durable. Pairing these lighting solutions with controls that allow for dimming and remote management to maximize efficiency and adaptability. With thoughtful planning and attention to detail, LED lighting systems can significantly enhance the functionality and user experience of EV charging stations. American Bright is here to help. [Contact](#) our experienced engineering team today with your project requirements.