

Optics

Performance

Our dedication to using only state-of-the-art, precision optics means you can plan projects efficiently – knowing you'll get just the results you need without extra fixtures, extra expense, or wasted light. With our wide variety of superior lamp options, ballasts, and controls – along with innovations like pulse-start metal halide, high-wattage compact fluorescent, and LED – Hanover Lantern optics maximize your high-performance options while maintaining long-term operating costs.

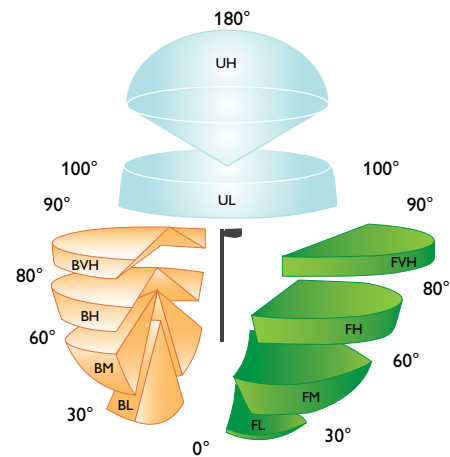
Dark Sky Recommendations

With precise lighting products, specifications and controls, we give lighting designers and contractors the tools they need to follow industry best practices – to conserve energy, address safety concerns, and preserve the natural light environment.

The BUG System —

Control Stray Light from Outdoor Luminaires

BUG stands for "Backlight", "Uplight" and "Glare". The acronym describes the types of stray light escaping from an outdoor lighting luminaire. "B" stands for backlight, or the light directed in back of the mounting pole. "U" stands for uplight, or the light directed above the horizontal plane of the luminaire, and "G" stands for glare, or the amount of light emitted from the luminaire at angles known to cause glare.



Bug Rating

BUG or Backlight, Uplight and Glare Ratings
(based upon maximum zonal lumens)

- B** Backlight 0° - 90° BL, BM and BH zones.
- U** Uplight 90° forward light up and over the top of the fixture to 180° backlight in the UL and UH zones.
- G** Glare is downward light from 90° forward down and under the fixture to 60° back light in the FH, FVH, BH and BVH zones.

The Three Composite (BUG) Ratings based on IES TM-15-11:

Backlight

Which creates light trespass onto adjacent sites. The B rating takes into account the amount of light in the BL, BM and BH zones, which are direction of the luminaire OPPOSITE from the area intended to be lighted.

Uplight

Which causes artificial sky glow. Lower uplight (zone UL) causes the most sky glow and negatively affects professional and academic astronomy. Upper uplight (UH) is mostly energy waste. The U rating accounts the amount of light into the upper hemisphere with greater concern for the lower uplight angles in UL.

Glare

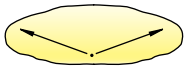
Which can be annoying or visually disabling. The G rating takes into account the amount of frontlight in the FH and FVH zones as well as BH and BVH zones.

Optical Assembly Types

Each fixture in this book has an Optical Assembly specification, which lets you know which "Type" optics are available for that fixture.

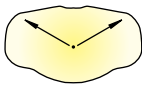
As you consider your options, think about what type of illumination you want your fixture to provide. Should the light go in all directions, or in a specific area? Are you lighting a large parking lot, or a narrow bike path?

The following illustrations show a bird's-eye view of the approximate photometric pattern you can expect from each optical assembly type.



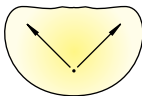
Type I

Recommended Application:
Narrow walkways or bike paths.
Recommended Placement:
At or near center of pathways.



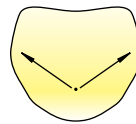
Type II

Recommended Application:
Wider walkways, entrance
roadways, bike paths and other
long and narrow lighting
applications.
Recommended Placement:
Near the side of roadways.



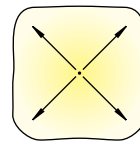
Type III

Recommended Application:
Roadways, general parking areas,
and other area lighting applications.
Recommended Placement:
Near the side of the lit area.



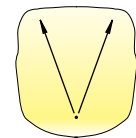
Type IV

Recommended Application:
Wall mounting applications.
Illuminating the perimeter
of parking areas.
Recommended Placement:
Near the side of the lit area.



Type V

Recommended Application:
General parking and area
lighting applications.
Recommended Placement:
At or near the center of an
intersection or in a large area.



Forward Throw

Recommended Application:
Perimeter lighting applications
for sharp house-side cutoff and
minimal spill light.
Recommended Placement:
At the building perimeter.