

# Safety- Single Colour

The following model series refer to the safety as shown below:-

- HPD
- CAS2 00 & 45

## PURPOSE

The purpose of this standard is to provide a standardized technique for evaluation of potential photobiological hazards that may be associated with various lamps and lamp systems.


## SCOPE

Any lamp or any product incorporating a lamp with sources of optical radiation including LEDs in the wavelength range from 200 nm through 3000 nm.

## SUMMARY

The International Electrical Commission (IEC) published in 2006 IEC 62471:2006 Photobiological safety of lamps and lamp systems which includes LEDs within its scope. Meanwhile LEDs were removed from the scope of the IEC 60825-1:2007 laser safety standard, the 2001 edition of which included LED sources within its scope. However, keep in mind that some countries and regions have adopted standards based on the IEC laser safety standard IEC 60825-1:2001 which includes LEDs within its scope.

Optical characteristics of a LED such as radiant flux, spectrum and light distribution are factors that affect the risk group determination of the LED. Especially a high-power LED, that emits light containing blue wavelengths, may be in Risk Group 2.

Risk Group	Explanation
Exempt Group 	Products with sources, which do not pose any potential photobiological hazard even for the continuous and unrestricted exposure. Example: 8 hours of exposure poses no acute hazard to either eye or skin, and 10,000 seconds (2.8 hours) of the intent starting causes no blue light retinal hazard.
Risk Group 1 (Low-Risk)	Products with sources, which do not pose any potential photobiological hazard with the limited exposure area under a normal behaviour of human being. Example: The hazard level exceeds the criterion for Exempt Group. 10,000 seconds (2.8 hours) of exposure, however, poses no acute hazard to either eye or skin, and 100 seconds of he intent starting causes no blue light retinal hazard.
Risk Group 2 (Moderate-Risk)	Products with sources, which pose a potential photobiological hazard even if a human does not feel any visual or thermal discomfort which is caused bt the high intensity light. Example: This hazard level exceeds the criterion for Risk Group 1. 1,000 seconds of exposure, however, poses no acute hazard to either eye or skin, and 0.25 seconds of the intent starting causes no blue light retinal hazard.
Risk Group 3 (High-Risk)	Products with sources, which pose a photobiological hazard even for the momentary or brief exposure.