

Technical information

Light technical definitions

Concept	Symbol	Unit	Formula	Explanation
Luminous flux	Φ	Lumen (lm)		Lumen output is the total amount of light from a light source defined toward the sensitivity curve of the human eye.
Luminous intensity	I	Candela (cd)	$I = \frac{\Phi}{\Omega}$	Intensity of the light output in a specific direction. Defined as luminous flux per solid angle.
Illuminance	E	Lux (lx)	$E = \frac{\Phi}{A}$	The luminous flux that hits an area divided by the size of that area.
Luminance	L	(cd/ m ²)	$L = \frac{I}{A}$ $(L = \frac{I}{A} \cdot \cos \phi)$	The luminous intensity that reflects from a surface divided by the size of the perceived surface.
Luminance distribution				The luminance distribution in the field of view controls the adaptation level of the eyes, which affects task visibility.
Colour temperature		Kelvin K	CIE 17.4	The colour temperature is used to identify the respective light colour. Less 4000K = Warm light. Above 4000K = Cold light.
Colour rendering	Ra	Ra-index	CIE 17.4	The colour-rendering index Ra derived from a set of six test colours and is used to evaluate the colour rendering characteristics of the lamp. The index is graded from 1 - 100 where 100 are lamps that contain radiation from the whole visible spectre. DIN 5035 states six of these levels: 1A=90-100; 1B=80-90; 2A=70-80; 2B=60-70; 3=40-60 and 4=20-40. 1B is recommended for indoor working environment.
Luminous efficacy	H	lm/W	$H = \frac{\Phi}{P}$	Luminous flux from the lamps divided by the power loss of the lamps.
System efficacy	Hs	lm/W	$H = \frac{\Phi}{P_s}$	Luminous flux from the lamps divided by the power loss of the system (lamps, ballast and others).
Uniformity / Evenness			$\frac{E_{min}}{E_{mid}} \quad \frac{L_{min}}{L_{mid}}$	Relations between the lowest and the average value. Passes for both Illuminance and luminance.
Glare			CIE-31	A condition that affects the visibility to see details or gives distaste. Normally divided in to: unpleasant glare (UGR/NB) and Sight restrictive glare (TI/°)
Cut-off angle				The angle between a horizontal axes through the luminaire and the sightline when the light source becomes visible.
Light output ratio	η	%		Ratio of the total flux of the luminaire, measured under specific conditions, to the sum of the individual luminous fluxes of the lamps operating outside the luminaire.
Reflection coefficient	p	%	$\frac{\Phi_{out}}{\Phi_{in}}$	Ratio of the total flux reflected from an area to the incoming flux on the same area.
Contrast / Contrast sensitivity	C Cs		$C = \frac{I_b - I_o}{I_b}$	Objects can be distinguished primarily on the basis on the difference in luminance and colour between the objects and its immediate surroundings. The contrast sensitivity expresses the least possible luminance contrast the eye can discern. Cs is influenced among others by glare from the visual field.
Average lifetime		Hours (h)		Average lifetime is defined as when 50% of a larger amount of the product is still running.
Service lifetime		Hours (h)		Service lifetime is defined as when 80% of the calculated lux level is reached.
Economical lifetime		Hours (h)		Economical lifetime is defined as when 70% of a larger amount of the product is still running.