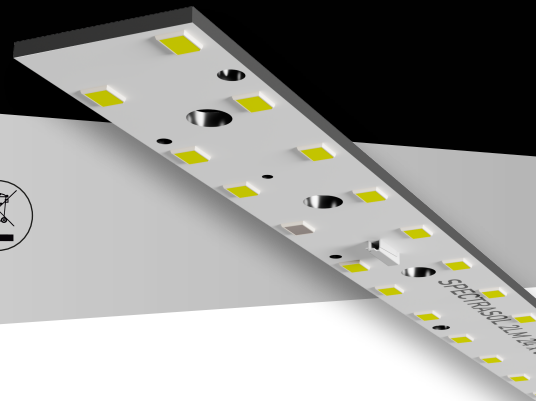


BUILT-IN PROCOGNITIVE LED MODULES SPECTRASOL 2LM



SPECTRASOL
BIODYNAMIC HUMAN SOLUTIONS



Procoognitive LED modules Spectrasol 2LM

The patented Spectrasol LED modules will equip your luminaires with artificial light comprising properties close to natural sunlight. Thanks to uniquely balanced spectral composition (SPD) that positively influences the body's circadian rhythms through the non-image-forming (NIF) system of the eyes, you will get biologically optimised full-spectrum lighting that supports overall health, physical and mental vitality, mood and cognitive functions (cognitive performance and endurance, concentration and attention) indoors during the day.

Due to specific patented construction (from standard LED chip set in different colours) Spectrasol light does not emit concentrated energy in the short-wavelength blue part of the light spectrum, the so-called harmful blue light, which increases the risk of macular retina degeneration. On the contrary, Spectrasol regenerates the eyes by emitting energy in the red, photobiomodulating part of the light spectrum, which acts as a compensating factor for harmful blue light with both preventive and therapeutic effect.

Procoognitive Spectrasol 2LM LED modules provide an option to integrate high-quality advanced light with the best, closest to natural sunlight spectrum within a wide range of indirect and direct light fixtures and applications.

Technical Data

CRI	>95
CCT real ¹	4800 K
CCT specific ²	5000 K
Beam characteristic	120°
Tc	max 80°C
Ambient temperature (Tc≤80°C)	-40...+50°C
Calculated LED lifetime	L80B20 70.000 h
PCB material	FR4
PCB mask color	white
Type of protection	IP00
Insulation max working voltage ³	300 V / 150 V*
Insulation test voltage ³	3000 V
CTI of the printed circuit board	600

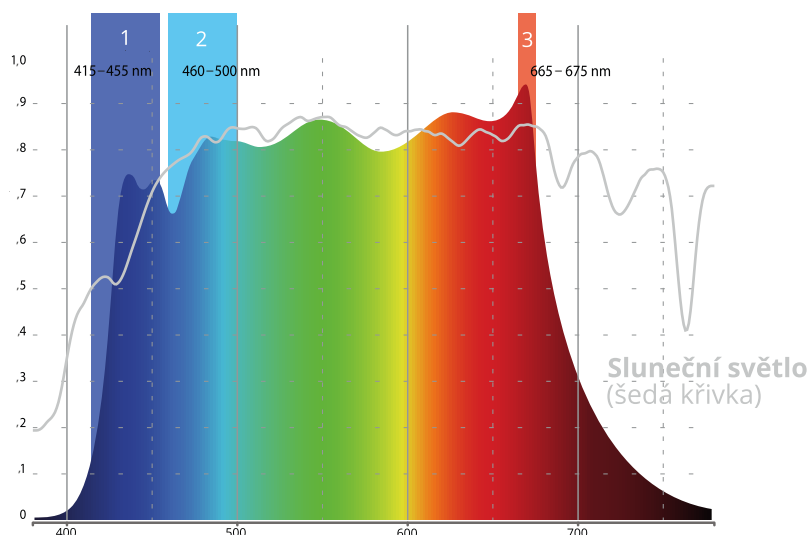
¹Real CCT in a typical illuminated room

²Specific CCT lights (spherical integrator)

*This value is for divided version only.

Tolerance CCT +/- 200 K

Visualisation of Spectrasol spectral composition and description of its key areas



LOW HARMFUL BLUE LIGHT

1 Does not damage retinal cells

blue light (415 - 455 nm)

PROKOGNITIVNÍ - CIRKADIÁNNÍ MELANOPICKÁ ENERGIE

2 Podporuje cirkadiánní systém a plynoucí kognitivní výkon, zdraví a naladění

Vyrovnaná energie v azurové
prokognitivní oblasti (460 - 500 nm)

REGENERAČNÍ FOTOBIMODULAČNÍ ENERGIE

3 Regeneruje poškozené buňky sítnice

Vrchol vyzářování v oblasti fotobiomodulační
červené (~ 670 nm)



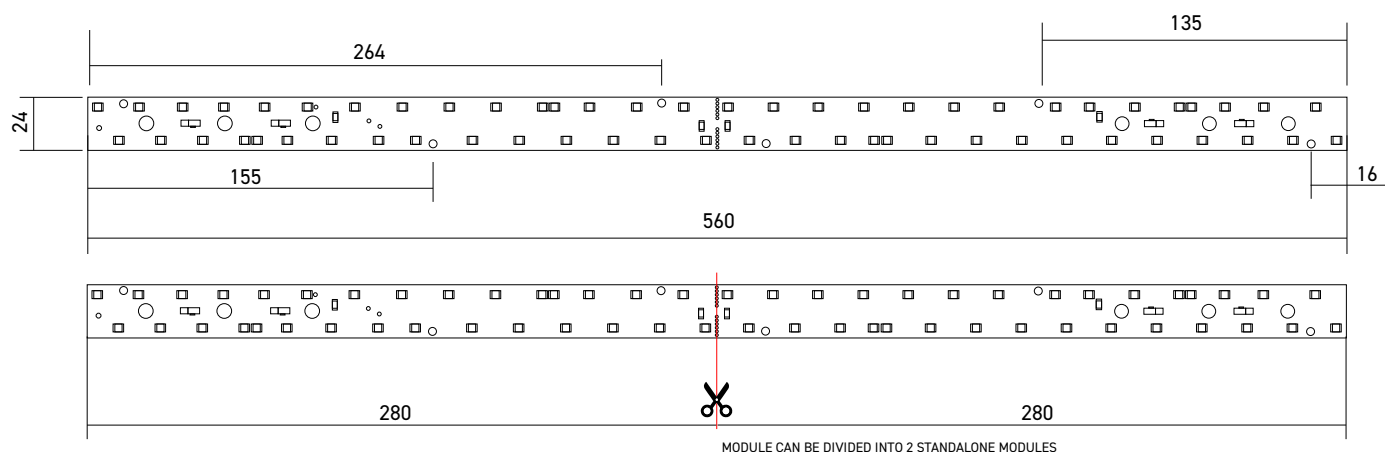


Electrical and optical parameters

Order code	Variant	Max current [mA]	current [mA]	Typical Voltage [V]	Luminous flux (Tc: 80°C) [lm]	Power (Tc: 80°C) [W]	Optical Power (Tc: 80°C) [W]	Efficiency (Tc: 80°C) [lm/W]
2-M01-0004	Spectrasol 2LM 24x560	480	120	32,7	3220	29,4	12,4	109,4
			450	30,5	1726	13,7	6,6	125,7
			450	65,4	3223	29,4	12,4	109,6

Tolerance of measured values +/- 10%

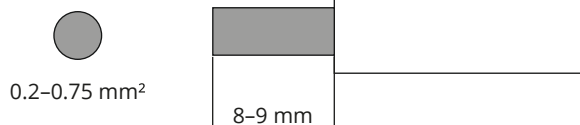
Dimensions



Wiring type and cross section

For wiring use stranded wire with ferrules or solid wire from 0.2–0.75 mm².

For the push-wire connection you have to strip the insulation (8–9 mm).



LED driver specification

Spectrasol 2LM modules must be supplied by a constant current LED driver. Operation with a constant voltage LED driver will lead to an irreversible damage of the module. Wrong polarity can damage the Spectrasol 2LM.

Use only high-quality LED drivers with very low output current ripple (flicker free)

LED drivers must be provided the following protections:

- Short-circuit protection
- Overload protection
- Overtemperature protection

Wiring

Parallel wiring

With parallel wiring tolerance-related differences in output are possible (thermal stress of the module) and can cause differences in brightness. If a wire breaks or a complete module fails then the current passing through the other module increases. This may reduce its life considerably. The max. permissible output current of the LED driver for parallel wiring is 1800mA.

Serial wiring

Spectrasol 2LM can be operated either from SELV LED drivers or from NONSELV LED drivers.

At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed. This is typically achieved by means of a non removable light distributor over the module.

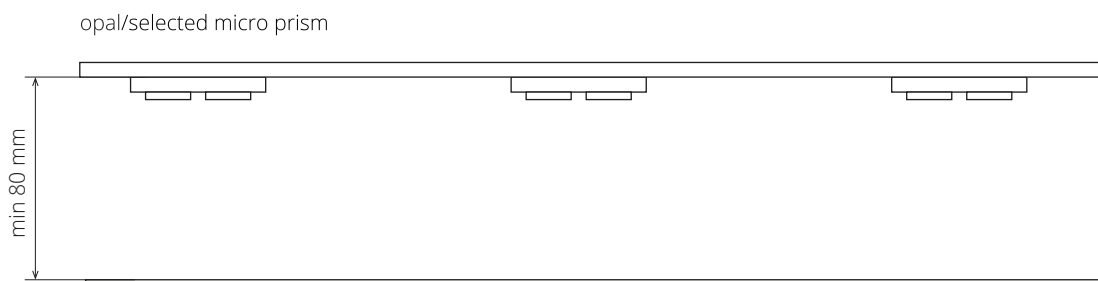




LED DPS integration instructions

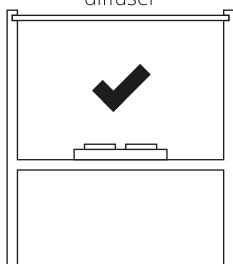
Spectrasol 2LM LED circuit boards are equipped with different colour LED chips. When designing integration into luminaires, the risk of multi-colour shadows or glare from light from different colour chips needs to be minimised.

Direct integration - surface light fixtures

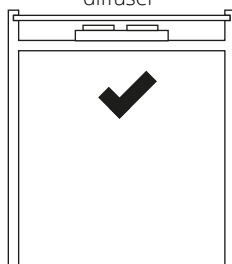


indirect integration - linear light fixtures

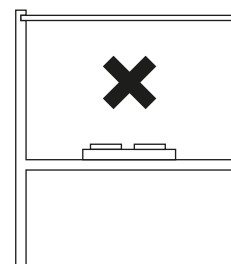
frosted/opal/micropism
diffuser



clear/frosted/opal/micropism
diffuser

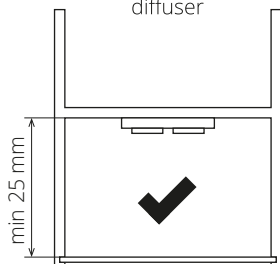


clear diffuser

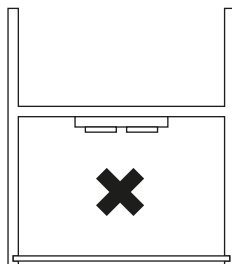


direct integration - linear light fixtures

frosted/opal/micropism
diffuser



clear diffuser



all kind of diffuser

